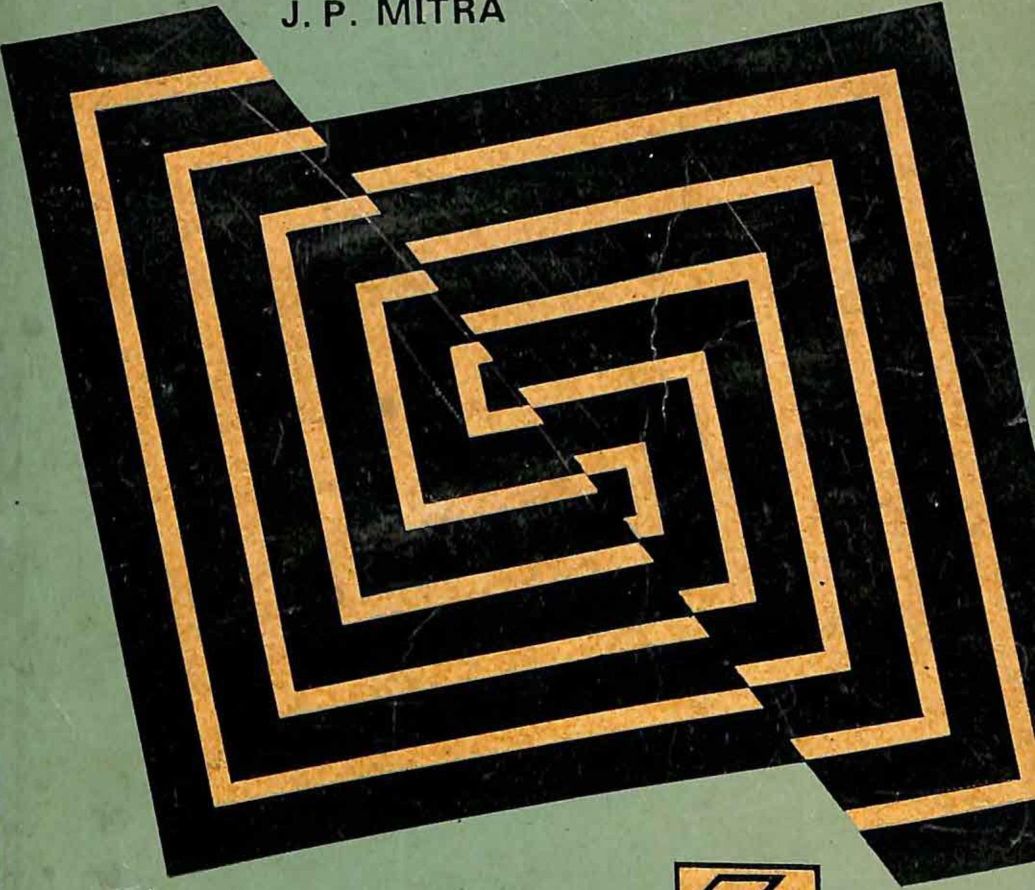
27

PSYCHOLOGY IN EDUCATION

J. P. MITRA



SEVAK PRAKASHAN

3412

PSYCHOLOGY IN EDUCATION

Copyright
SEVAK PRAKASHAN
1979

PSYCHOLOGY IN EDUCATION

J. P. MITRA
Revised by Dr. C. M. Fleming
of London University

1979

SEVAK PRAKASHAN
306, Hanuman Industrial Estate,
G. D. Ambekar Road, Bombay 400 031.

S.C.E.R.T., Wes
Library
Calcutta
25/3, B. C. Ro

R T.. West Bengal
16-9-86
No. 3412

150
MIT

DEDICATED

TO

MY FATHER

CONTENTS

I PLACE OF PSYCHOLOGY IN EDUCATION ... 1

II DEVELOPMENT OF THE CHILD 13

III PERCEPTION, MEMORY, IMAGINATON, ATTENTION AND INTEREST 45

IV PSCHOLOGY OF LEARNING 62

V INDIVIDUAL DIFFERENCES 101

VI MENTAL STRUCTURE 113

VII INTELLIGENCE 128

VIII EXCEPTIONAL CHILDREN 164

IX EMOTIONS 182

IXA PERSONALITY 210

X EDUCATIONAL AND VOCATIONAL GUIDANCE 226

XI INDIVIDUAL, SOCIETY AND EDUCATION ... 239

XII MENTAL HEALTH OF THE CHILD : DIAGNOSIS AND THERAPY 255

XIII SOME BASIC PROBLEMS OF MENTAL HYGIENE 279

XIV GRAPHIC REPRESENTATION OF DATA 308

Introduction

This book is intended primarily as a text-book for students of training courses and as an introduction to more detailed texts for students taking further Diplomas or Degrees in education. It provides as far as possible a concise and systematic account of the theory and findings of modern psychology dealing with the problems of education.

An individual with his innate capacities, his sense organs to perceive, to know, to learn and to develop to be a person in society has been studied.

How to measure intelligence and what is the real structure of mind have also been discussed. Mental health, mental measurement, educational and vocational guidance have been given full consideration. "The individual differences" are not neglected.

An attempt has been made in this book to maintain academic interest and at the same time the contents are presented in a research-oriented manner to motivate the readers to do some research work in the modern field of Educational Psychology. The book is not burdened with unnecessary details and though the book contains statistical calculations, charts and diagrams etc. the pages are not exclusively technical and it may be read by intelligent readers interested in psychology in education.

I must acknowledge my indebtedness to Dr. E. A. Peel, who like a guiding star has bestowed on me his "kindly light" to lead me on in writing out this book.I I find it difficult to express adequately in words my feelings of gratitude and respect to Dr. C. M. Fleming, my teacher and guide, for all that she has done to see this book through. She took pains to revise and correct the manuccript, which was sent to her in the University of London.

Suggestions for improvement are always welcome.

Lastly I must also mention that I am indebted to many pioneer writers in this field of Educational Psychology for ideas and suggestions and this has been acknowledged in the references given at the respective chapters of this book.

I tender my obligation and heartful gratitude to Mr. K. S. S. Raghavan, Editor-Publisher of SEVAK PRAKASHAN for his invaluable help in publishing the book.

I will deem my labour fruitful if the book can really help those for whom it is written.

JYOTI PROKASH MITRA

'Satish Smriti'
10/3, Deodar Street,
Ballygune,
Calcutta-700 019
May 16, 1979.

CHAPTER I

Place of Psychology in Education

Nature and Scope of Educational Psychology

Psychology comes from the two Greek words Psyche and *Logos.* Psyche means soul and Logos means Science or discourse. Psychology is, therefore, a science of soul.

Plato (427-347 B.C.) made a clear distinction between mind (soul) and body and pointed out that the mind was concerned with learning and the main function of the body was to receive sensations. Soul not being material, apprehends an ideal world and it is immortal. Psychology when defined as a science of soul is acknowledged as a branch of Philosophy.

Aristotle (384-322 B.C.) tried to bridge the gulf between soul and body. According to him the soul is the form of the whole organism. He thus gives a functional definition of mind. Mind is a process, it is defined in terms of what it does. The soul or the psyche has the power or faculty to function in various ways. There are, according to him, five faculties such as (1) the vegetative, (2) the appetitive, (3) the sensory, (4) the locomotive and (5) the rational.

Aristotle's five faculties gave rise to Faculty Psychology. The term faculty is derived from the Latin word 'Facultus', which means a capacity or power to act. During the 19th century, the five faculties of Aristotle were reduced to three faculties of knowing, feeling and willing. The faculty of knowing or cognition requires the help of senses but the active intellect abstracts the essence of the sensory data. Faculty psychology emphasised the importance of intellect in learning and neglected the part played by senses.

The first great name in the psychology of the Renaissance was that of Descartes. He distinguished between animal and human behaviour. Animals were like machines and their bodies were controlled by physical laws. Human acts were divided into two groups — those of mechanical nature and those of rational nature. The rational acts made possible judgment. choice and will. This theory, therefore, made a sharp cleavage between animal functions and higher functions. In acknowledging mind and matter to be totally different things, Descartes realised the serious difficulties in his position. How could the body act upon the soul and vice-varsa if they are opposed in nature ?

Hobbes outlined an empirical psychology in which sensation was considered to be the source of our ideas and the use of force and controlled association was to explain the interconnections between the elements of experience.

Locke's contribution to psychology lay in making explicit the possibilities of a theory of association which should start with the data of experience and work out the laws governing the interconnections and sequences among experiences.

In the 18th and 19th centuries, the concept of 'association of ideas' was further analysed by David Hume and Thomas Brown. Hume having examined consciousness could not find any evidence of soul and offered a psychology which was nothing but the study of a series of experiences acting and reacting through the natural force of association, though Berkeley admitted the existence of a soul to bring all the experiences together.

Thomas Reid protested against Hobbes's mechanism and Hume's indifference to the claims of the soul and admitted the existence of mind. The soul or the mind has the capacity to perceive real things, to think and to act rationally. There are definite and distinct faculties or capacities of the soul.

Psychology thus so long being a study of mind was an offshoot from Philosophy. Emphasis was laid on the nature of mind and the processes involved in thinking. The methods of studying psychology were those of theorising and introspection.

In 1900, Psychology became experimental. "In theory the psychologists of 1900 subscribed to the orthodox definition of psychology as the science of consciousness; but in practice they were studying man's performances rather than his states of consciousness. In theory they stood for an analytical psychology patterned after chemistry, with elementary sensations, images and feelings, and with complex thoughts and emotions composed of these elements; but in practice they often disregarded this scheme".[1]

Since the beginning of the 20th century, Psychology has received the status of an independent study. It has become the science which seeks to interpret in psychical or mental terms the behaviour of living organism so far as that is psychically and socially conditioned.

The teachers and the educationists are concerned with the modification of behaviour or education of the child. Educational psychology being an applied branch of Psychology is immensely helpful to them in this regard. The aim of education no doubt determines the scope of educational psychology. If the aim of education is to impart knowledge, educational psychology is primarily concerned with the learning processes and again if education aims at the development of character, then educational psychology should include detailed studies of temperament, personality, drives and instincts etc. We must admit that psychology can never formulate the aim of education but Dr. James Drever points out that without the help of psychology the educator cannot know whether he has succeeded in his aim or not.

It is necessary for a student of educational psychology to know how far different schools of psychology have contributed towards the growth of educational psychology.

STRUCTURAL PSYCHOLOGY: It emphasises the role of nervous system in human experience. No experience is possible without the participation of the nervous system. The structural aspect of mind is very much in consideration here. Wundt

---

1. Woodworth, R. S. *Contemporary Schools of Psychology, 1951.*

says experience is composed of three main types of elements: sensations, images and feelings, three categories which survive in the psychology of the 'structuralists". He discards 'Apperception' later and considers that 'attention' is the process by which sensation or images take on greater 'clearness'. Many elementary experiences — sensations, images, and feelings — are organised into a whole by the process of creative synthesis. Wundt held that it is of the very nature of human experience to give itself organisation.

The main contribution of structural school of psychology is its scientific method and its emphasis on experimentation. Researches regarding sensation, feeling and attention provide knowledge useful to the education of children.

The structural psychologists assume that the composition of mental life is "wholly dependent upon certain previous events of a strictly physical nature, and mind reveals no other properties than those shown in its composition". There is a very close sequence of physiological and psychological processes. This view makes human mind a composition of various mental elements and a passive agent.

FUNCTIONAL PSYCHOLOGY : James in the closing years of the 19th century expressed the feeling that 'mind' should be not a structural but a dynamic concept. Stout's *Manual of Psychology* illustrates the division of mind into a few types of action rather than a few types of experience. Hoffding and Stout believed that we must look upon mind as a group of functions. The functional psychologists consider mind in relation to its functions. Consciousness is such a function which helps the individual to maintain himself.

Another important feature of functional approach is that mind is an agent of adaptation and adjustment. The concept of adjustment is no doubt biological and it may be admitted that functional psychology has been greatly influenced by biological science. According to Cameron[2]. "Psychology, like biology, may adopt as its fundamental conception for the understanding of man, the view that man, like all other living organisms, is subject to a constantly recurring series of changes due to the necessity of adaptation to environment. All animals, including man, are provided with structures and functions that make it possible for them to lead a more or less independent existence. If the environment is not suitable to their needs, they may react in some cases by moving away from the unfavourable surroundings; or in other cases by rearranging or refashioning the environment, as far example, when man builds dwellings". Functional psychology no doubt, emphasises mental operation and mental adjustment.

---

[2] Cameron, E., *Educational Psychology, 1927.*

The emphasis on education for adjustment may be due to the influence of the functional school of psychology. The role of environment in education has been clarified by the functional psychologists.

Thus, we can easily assume that functional psychology has influenced educational psychology in emphasising the function of mind and in adjustment of the individual to his environment.

John Dewey has contributed a lot to educational philosophy and psychology from the functional point of view. The functional psychology in its applied form is very fruitful. The fields of educational psychology, child psychology, animal psychology and individual differences and mental testing have been greatly influenced by functional psychology.

BEHAVIOURISM : The school of behaviourism influences educational psychology in the area of teaching and learning. Pointing out the place of behaviourism in the psychological systems, Higginson states : "In the structural system, the bodily processes are assumed to run their courses as the physiological basis of the mental. In the functional system the mind employs directly the receptor organs, the nervous system and the effector mechanisms as effective tools in adjustment. In neither, is the body the direct object of examination or study. We must now consider another attempt to understand a human organism in which the obstruction has taken an opposite direction to that of the above two. Here the mental side has been partially, or in some cases wholly, disregarded, while a major degree of emphasis is placed instead upon the purely bodily side of the organism. This system is known as behaviourism".[3] Behaviourism is not concerned with the structure or functions of the mind but with the behaviour as it is observed. Stimulus-response mechanism is an essential part of behaviourism. It contributes much to the methodology of educational research. It has emphasised objectivity in the experimental studies of child education.

We have considered different schools of psychology and have pointed out their relationship with as well as some of their contributions to educational psychology. Psychology is no longer a study of consciousness but it studies all kinds of behaviour and responses and adjustments made by an organism. Besides these, psychology is concerned with activities like feeling, thinking, imagining, perceiving etc.

Educational psychology does not attempt to study behaviour of human organism in all situations of life. It is concerned only with educational situations. Education is a designed process which aims at developing an individual. Broadly speaking, education is development involving all that goes on in life. "The purpose of education", as Peel holds "is to promote the development of a well-integrated person, capable of exercising such responsibility in society as his powers allow."[4] The purpose of education, thus given by Peel helps us in determining the scope of educational psychology. The word development signifies mental and emotional growth — specially in the periods of childhood and adolescence.

Motivation, perception and thinking also come within the scope. The process of development leads to 'integrated person', and therefore, the study of personality development is needed. Education, it is said, develops the individual so far as his powers allow, which implies that individuals are differently endowed by nature and inheritance. We must also know something of the relationships of the individual to society. We must know something about the ways in which attitudes and values are formed. Thus educational psychology is concerned with the nature of learning, the growth of human personality, the individual differences and the person in relation to society. Individual differences refer mainly to psychlogical qualities in the person.

---

[3] Higgiason G. D., *Fields of Psychology*, 1931.

[4] Peel, E. A., *Psychological Basis of Education*, p. 4.

Peel has given a nice schematic representation to the scope or fields with which educational psychology is concerned. This is illustrated in the figure given below:

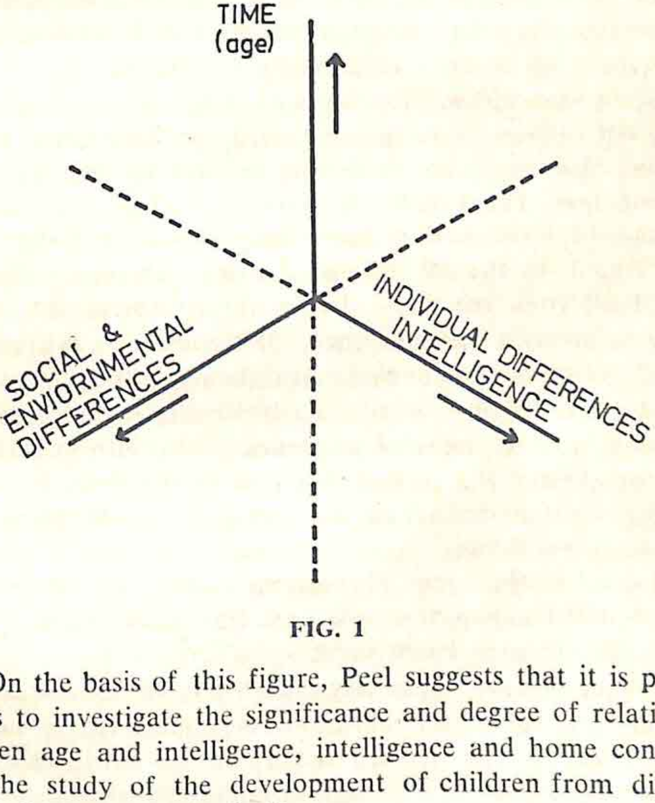


FIG. 1

On the basis of this figure, Peel suggests that it is possible for us to investigate the significance and degree of relationship between age and intelligence, intelligence and home conditions and the study of the development of children from different kinds of homes longitudinally.

Accordingly, "educational psychology is the science of education and helps the teacher to understand the development of his pupils, the range and limits of their capacities, the processes by which they learn and their social relationship".

Psychologically, education has been defined by Tow, W.G., in his *Educational Psychology*. "Education," he says, "is essentially human development in a controlled environment". The teacher is required to know the nature of human development and to create environment suited to the educational interests of the child. He suggests that educational psychology may be defined as "the study of the application of individual and social psychology as subject matter, research techniques, and professional services to human development in a controlled environment". Educational psychology is concerned with all aspects of human development which are educationally significant.

Methods of Educational Psychology

In all sciences, data are collected by observation and experiments are made on these data to find out the underlying scientific law. The traditional method of observation used in Psychology is introspection. James Sully in *Outline of Psychology* says, "I abide by the old conception that psychology is distinctly marked off from the physical or natural sciences as .... having to do with the phenomena of the inner world, and employing its own method or instrument namely introspection". But this subjective method is quite inadequate to bring educational psychology to the status of a science. If by introspection one wants to observe the mental states or phenomena, which are changing constantly, he cannot introspect some phenomena which he wants to do.

Moreover, the same phenomena cannot be observed by different individuals in the same way. Introspection thus fails to present data to experiment upon.

We can observe objectively children in their normal situations and can deliberately control the situations in order to study the particular aspects of their behaviour and can also ask the individuals to report their doings, attitudes and wishes. The educational psychologists depend on these available evidences to make decisions. We must, however, admit that there is sufficient regularity and constancy in human behaviour to make it subject to scientific study. Whether human conduct is completely determined is a question outside the scope of factual account.

Psychology is an objective science in a similar sense to the science of physics. Criticisms are often made against a psychologist that when the research worker in psychology, in order to measure the aesthetic judgments of children, applies tests of *pictorial* composition or applies intelligence tests to measure their mental abilities, he gets out of his experiment only what he has put in. The criticism, however, is based on wrong notions. It is often wrongly thought that the scientific concepts refer to things which actually exist and that the scientists very cleverly isolate these really existing things and measure them. It is thought that bodies have length and that a scientist discovers this fact and then proceeds to measure it. Similarly it is thought that people have intelligence and that a scientist having discovered that proceeds to measure intelligence. Thus, it is a mistake to consider that the scientific laws and concepts exist in nature independently of man.

Thurstone rightly observes, "To discover a scientific law is merely to discover that a man-made scheme serves to unify, and thereby to simpify comprehension of a certain class of natural phenomena. A scientific law is not to be thought of as having an independent existence which some scientist is fortunate to stumble upon. A scientific law is not a part of nature. It is only a way of comprehending nature". Intelligence is not something directly given in nature, which we may succeed in isolating and measuring. Just as it is convenient to postulate psysical forces in describing the movements of physical objects, so it is also natural to postulate abilities and their absence as primary causes of the successful completion of a task by some individuals and of the failure of other individuals in the same task. "When the physicist measures the length of a piece of material he defines length, by the method he uses to measure it, just as much as the psychologist defines intelligence by the test which he constructs, or aesthetic response by limiting himself to a particular selection of pictures or patterns".

EXPERIMENTAL METHOD : According to Stout, experiment is observation of something which is artificially presented in a prepared way. In experiment, one is experimenter and the other is the subject of experimentation.

The experimenter in a prepared artificial situation conditions the subject and observes the behaviour — changes of this conditioned subject, — and the subject also on his part narrates his own mental experience observed by introspection.

Sometimes two groups of subjects are required for experimentation. One group is known as 'the Experimental Group' and the other is known as 'control group'. The members of both the groups are equally fit both physically and mentally. The experimental group is being trained for a certain activity for a limited period of time and the control group is kept free from such training for the particular activity. Then both the groups are asked to perform the same activity for which one group is trained and the other is not under the same situation. If it is found that the trained group performs the activity successfully then the influence of training or conditioning will be apparent. It may be noted however that the responses of the 'Subject' in a prepared artificial situation may not be normal or regular and so the assessment may be wrong.

THE GENETIC METHOD : This method helps in knowing the growth or development of the child-mind from birth to maturity. Mental development means the development of the mental potentialities, derived from heredity, with their interactions with the environmental influences. This method studies the gradual development of intelligence, mental abilities and personalities of the individuals by comparing their behavioural expressions at different stages of development.

THE CASE HISTORY METHOD : The case history of an individual is a description of his environment and back-ground and of the influences that have affected his development. The method of case-study is very helpful to psychology from the field of social work. "When psychology, psychiatry and social work become combined in the form of the child guidance clinic, the social worker's role was to gather the case histories". Case-study data were obtained from observations made of the subject and of his surroundings and from the reports of others concerning him.

The chief sources of information are interview with the parents of the subject and with other members of his family, his teachers and his associates. "The purpose of the case study is to achieve better adjustment of the individual by means of a comprehensive appraisal of all factors contributing to the problem under study and to institute remedial activities".

STATISTICAL METHOD : Statistical method is also applied to determine the individual differences in respect of intelligence, aptitude, interest and personality traits. Methods of Correlation, Factor Analysis etc. are helpful statistical devices in the study of psychology.

PROJECTIVE TECHNIQUES : These are helpful to find out the real nature of personality. A commonly used definition of projection is that "projection is the reference of impulses, thoughts, feelings and wishes originating in the person himself to persons and objects in the outside world." "Projection, in short, is taking one's own thoughts and impulses and attributing them to another person". The act of projecting being unconscious it is not realised as a projection by the person himself. Moreover, the process of projection being unconscious, it is not possible for anyone to know its real nature outright. The motives, anxieties and conflicts have to be studied.

RORSCHACH TECHNIQUE : This is one of the projective technique which is used to diagnose the unconscious aspects of personality. The value of this 'ink-blot' technique, like that of free association lies in the fact that it discloses some of the trends of a person's thinking and samples his typical habits of response.

REFERENCES :

1. Woodworth, R. S., *Contemporary School of Psychology*
2. Drever, J., *An Introduction to the Psychology of Education*
3. Peel, E. A., *The Psychological Basis of Education*
4. Trow, W. C., *Educational Psychology*
5. Murphy, G., *Historical Introduction to Modern Psychology*
6. Cameron, E., *Educational Psychology, 1927*
7. Higginson, G. D., *Fields of Psychology, 1931*

Questions.

1. Discuss the nature and scope of Educational Psychology.

Why is it included in every Teacher Education Course?

2. Is knowledge of the fundamental concepts of Psychology of real value to teachers?
3. Discuss the relation between Psychology and Education.
4. Does Psychology determine the aim of education?
5. What are the methods adopted in the study of Psychology? Briefly discuss the different methods.

CHAPTER II

Development of the Child

Educational psychology studies the individual child in educational situations. Hence it is concerned with educational growth and development of the child. The study of educational growth requires the understanding of the nature and principles of human growth and development.

The individual grows as a whole. His physical, emotional, intellectual (mental), social and other types of growth are interrelated.

In the human growth and development bodily changes attract our attention first. During infancy and childhood, the body becomes larger, taller, and heavier. These bodily changes are designated as growth. Thus growth indicates increase in bodily dimensions. But growth includes functional changes also.

Characteristics of Development

Ordinarily, growth and development refer to the same concept. But strictly speaking development represents "changes in an organism from its origin to its death, but more particularly the progressive changes from origin to maturity. A number of stages of development in human being and related species are conventionally distinguished. Unfortunately, development is a matter of a number of relatively independent functions, hence a person may be in one stage by one criterion, in another stage by another. A person may have a child's physiological, an adolescent's social and an adult's intellectual development". But it cannot be denied that growth changes, maturative changes, and learning are highly inter-related processes. "The term development is used to designate this overall change, and, in an inclusive sense refers to any or all of these specific processes of changes". It is admitted, however, that "during the period before the capacities of the child have reached the peak of their development, changes in behaviour are the effects both of maturation and of learning. Beyond maturity behaviour modifications are the result mainly of learning".[1]

PHYSICAL DEVELOPMENT: During infancy and childhood bodily changes in the human growth and development become prominent. We are to consider the pre-natal development of the child here.

The science of genetics explains that when a male sex-cell or sperm gets fertilised with a female sex-cell or ovum, it contains 48 chromosomes. When fertilization takes place 24 chromosomes of a sperm combine with the complementary type of 24 chromosomes of an ovum. Thus each fertilised cell has 48 chromosomes which are inherited in equal numbers from father and mother.

Chromosomes contain thousands of genes. But each pair of chromosome has the same number of genes and arranged in

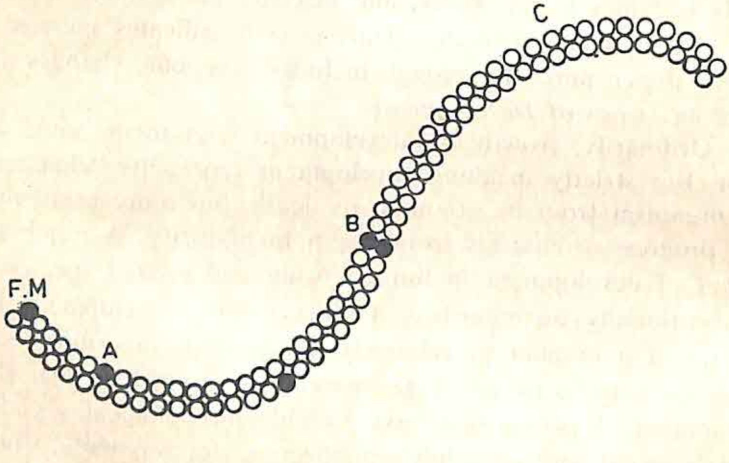


FIG. 2

---

[1] Mc Connell, T. R., "The General Nature of Growth and Development", *Educational Psychology*, ed. Shinner.

the same order.

The genes are represented by beads in paired chromosomes of various lengths. One string comes from the father, the other from the mother. The black beads represent defective genes. Gene A is defective in the mother but normal in the father, so the offspring will be normal in the ratio of 3 to 4. Gene B is defective in both parents. If this determines feeble-mindedness, the child will be defective even though both parents are normal. If Gene C determins genius, the child will be a genius, though the parents are not[2].

It should also be noted that the genes are the carriers of physical and temperamental traits. How the sex of a child is determined has also been stated by the geneticists. According to Madigan, "The sex cells of males and females have 23 similar pairs of chromosomes but the twenty-fourth pair differs. The ovum has two sex chromosomes alike and they are designated as X chromosomes. The sperm contains one of these X chromosomes and a Y chromosome. When the sex cells ripen and divide, the ovum has only one X chromosome but half of the sperm cells have the X chromosomes and other half of the Y chromosome. If a sperm cell with a 'X' chromosome unites with the ovum, the child will be a girl (46 + 2 X); if a sperm with a Y chromosome fertilizes an ovum, the child will be a boy (46 +X + y)"[3].

The main features of the physical development of a human being can be studied following the ideas given by A.N. Kabanov as follows :—

DEVELOPMENT WITHIN THE UTERUS : The fertilised egg cell begins to develop rapidly and is soon transformed into a multicellular embryo, the number of cells of which go on multiplying continually. It is true, that the embryo, in the course of its development reflects only the most basic features in the organisation of its ancestors. But these features nevertheless give us an idea of the development and origin of man.

[2] Madigan, M. E., *Psychology*, 1957, p. 57.

[3] *Ibid.*, in p. 58.

At the end of the second month of embryonic development, the whole body of the embryo acquires characteristic human features; at this stage of development the embryo is called the foetus. The foetus lies in the membranes enclosing it as if in a spacious bag. The amniotic fluid, inside the bag, gives the foetus freedom to develop and also the possibility to move about.

In the course of the nine months of its life in the uterus, the embriyo does not inhale air, nor does it digest food. All this is done for it by the mother.

SPECIAL FEATURES of DEVELOPMENT : From the very first moment of its birth, the organism of an infant comes into direct contact with the external environment: it breathes, eats, eliminates waste products. Once the connection with organism of its mother is cut off the child immediately begins to accumulate in its blood, carbonic acid. which was formerly eliminated through the placenta. The accumulated carbonic acid irritates the respiratory centre. The so-called first cry of the child indicates that respiratory movements have begun.

GROWTH and METABOLISM : At birth an infant approximately weights 3 filogrammes and by the end of the first year about 10 kilogrammes. It is clear that with such rapid growth, metabolism in an infant must be very intensive.

NUTRITION : Sufficient quantity of nutritive material is necessary both for the normal work of the body organs and for their growth. The more intensive the growth, the more proteins and fats the food should contain. Proteins are necessary for the building up of new cells and vitamins are very important for the normal nutrition of the growing organism.

The child is born with certain primary sensory capacities. Gradually the child responds to light and sound. The new born child can even discriminate between sweet, salty and pungent tastes. He can also move his head and shut and open his eyes etc. As the child grows and develops he begins to move his limbs and with the movements of limbs his mental development takes place. He becomes curious to be acquainted with new objects. A few months' old child can sit if helped and a seven months' old child can sit independently. He can stand with a support when he is nine or ten months old and can walk being supported at the eleventh month and walk independently when he is fourteen months old. He gradually then learns to perform complicated physical movements. As the child grows up in age, he learns to co-ordinate the muscles. He can pick up the thing by hands which he perceives by his eyes. He learns to jump, to run and to play.

The Nervous System

The nervous system takes part in all of the processes that go on in the organism. The co-ordinated reactions of the whole organism as well as the work of each separate organ depends upon the degree of development of the nervous system.

In a new born child, the cortex of the cerebral hemispheres functions very weakly, although conditioned associations may already be formed. Gradually the movements become varied and more expedient in proportion to the development of the corresponding parts of the brain. The associations between the various cells of the cerebral cortex increase in number and in complexity from year to year.

The Endocrine Glands

The role of the separate endocrine glands differs at various periods in one's life. In the first few years of a child's life, the thymus gland is of vital importance for normal growth and development. Later, this gland lags behind in growth. The sex glands develop very quickly between the ages 12 and 15 and their hormones bring about profound changes in the activity of the whole organism.

The nerves which form the cables of the human telegraph system are composed of bundles of long thin nerve cells called neurons. In the simplest kind of nerve message only two neurons are concerned. One of these starts in a sense-organ, say in a pain spot in the hand and it runs into the spinal column where its tassel-like endings are entangled with the dendrites of another neuron, an effarent neuron (those which carry messages *in* are called affarent and those which carry it *out* efferent). The chemical excitement or whatever it is, passes from the one neuron-ending to the other, such a place of crossing being called a synopse and the message goes out along the efferent neuron to a muscle which jerks the hand away from the pin which has pricked it. Such action may be called a reflex action. The action need not be conscious.

"The whole man is 'integrated', caused to act as one unit, by the interlocking of the glandular system with the nervous system on the one hand and with a large number of organs on the other". Godfrey Thomson in his *Instinct; Intelligence and Character* holds "we may suppose that animals have the beginnings of imagination, and that this is a first step in the direction of that kind of behaviour which in man we call reasoning. The anticipatory readiness of the next-to-act neurons is increased to such a pitch that their incongruity with the external situation is realised".

By the co-ordination of the primitive vocal responses in the infant, language is learnt. The communicative use of symbols is easily learned by the child when some cry or gesture is followed promptly by the satisfaction of an organic need such as hunger. The cry becomes not only the expression of the need, but also a step in the direction of satisfying it. It is probable that language symbols are more used by children and adults also to arouse other persons to do things.

A child learns the meanings of words by hearing the word while reacting to the object or event or relationship which the word means. "The word thereby becomes a substitute stimulus for all the reactions which the object itself would call forth, and these reactions constitute the meaning of the word". The physical developments of the male and female children do not take place in the same way. Dr. Fleming observes "At about the age of ten the average height of girls equals that of boys. From the ages of eleven to fourteen their yearly increment is greater than that of boys, but from ages thirteen to nineteen their annual increment decreases steadily to such an extent that by the age of fifteen the boys on the average have

---

4. Shaffer, *The Psychology of Adjustment* p. 74.

again become somewhat taller". At the period of adolescence, the girls attain physical maturity more quickly than the boys. The years of adolescence are characterised by a period of more rapid physical growth than has appeared in the later years of childhood and this is followed by a gradual slowing down of the rate of development.

The endocrine changes are supposed to be involved in the growth and development. These are characterised by an increased secretion of pituitary gland, which produces not only growth hormones of the general type, but gonad-stimulating hormones which lead to liberation of increased amounts of male and female sex hormones. These direct the growth of the sex organs and determine the appearance of secondary sexual characteristics such as increased size of breasts, voice changes and the like. It is now known that every individual is bisexual and secretes from an early age both male and female hormones. These sex hormones increase in quantity as children approach puberty.

Proper sex education is to be imparted at this stage to satisfy the sex curiosity. The adolescents should be given scope for play and games and physical exercise as well as for studying good books.

Mental Development

A child is born with certain capacities for adjustment and the development of the capacities enables the child to learn and to adjust. At the very beginning, the child fails to distinguish between different sensations which he experiences at a time, but gradually he learns to establish the relation between the past and the present experiences and utilising the past experiences, brings changes in his behaviour. Between 6 and 12 years of age the child can remember his past experiences and acquires knowledge. He can perceive, can imagine and can imitate and learn. He adjusts with the environment successfully.

Memory develops and along with it attentiveness grows. Mental development indicates the increase in "attention span". Not only can the child remember the past but he can also construct images. Studies have shown that without images, thinking is not possible. In other words, images are the elements of all thinking. Images are also effective means to abstract thought. Another very important feature of mental development of a child is the formation of concept or general notion. Piaget has studied the development of concept and reasoning among the children. According to him the child has no idea of cause and effect in the beginning. But one thing is definite that the child is in a position to solve problems on the basis of his experience. It is found that abstract concepts like justice, truth etc. are understood by children when they are explained on the basis of concrete happenings.

Along with the development of mind, the development of intelligence takes place, though it is believed that intelligence does not increase or develop after 16 years of age. Dr. Fleming in Adolescence says, "In many reports on adolescence, statements were made as to the growth of intelligence to the effect that curves of growth formed practically ascending straight lines from the age of three to that of twelve, that they then showed a 'sharp bend' and became practically horizontal from the age of sixteen onwards.

"But we should always bear in mind that there are no clearly defined stages of mental development. It is correct to say that a person goes on developing mentally all his life, though it is possible that during one period mental development is faster than during the other." (See also Chapter VII).

Emotional Development

In order to understand the personality and development of a child, not only the child's intellectual development but also its emotional development must be considered. Education of the child very much depends upon the harmonious emotional development of his. Healthy mental and physical growth comes almost imperceptibly to the child who receives adequate nourishment — physical and intellectual — in an atmosphere of trust and serenity and against a background of orderly living, where his emotional life gets no conflict and enjoys a smooth sailing. It cannot be denied that the arousal of emotions depends upon a number of factors such as the individual's health, attitudes,

S.C.E R.T., West Bengal
Date 16-9-86
Acc. No. 3412

interests, needs, motives, desires, goals, ideals and the degree of his self-control and self-understanding. According to Jersild[5] emotions are aroused "in a person by any happening in which he has some thing at stake. It is also possible for emotions to be aroused due to an event in the outside world or within the individual himself which, on the one hand, threatens, or thwarts, or actually injures him through damage to his body, pride or self-esteem. In that case, negative emotions such as fear or anxiety, anger or hostility or complex feelings of self-contempt occur. On the other hand, positive emotions may be aroused by any circumstances that further augument or enhance the gratification of a person's needs or the realisation of his goals.

As the child develops physically, he acquires more and more understanding of his social environment and human relations. He realises that certain types of behaviour lead to satisfaction and pleasure and others lead to annoyance and unpleasantness. With a view to enjoying emotional satisfaction, the developing child adopts a style of life and patterns his behaviour accordingly.

Studies of Gessell and some others indicate that with the progress in age and experience differentiation and integration of emotions take place. As the child increases in age and experience, his emotional responses become less violent and more subdued. Generally the child and the adult will have the same emotional response to a given stimulus. But their emotional responses differ in intensity and in the nature of expression. In other words, differences in the child's and the adult's emotion could be seen in terms of emotional control. It is through education that the child is taught to express his emotions in a socially approved manner. The teacher should help a child in attaining emotional maturity by treating him fairly and justly and by giving him love and affection of a father or an elder brother.

Social Development of the Child

The purpose of education may also be said to help the growing child in socialisation. This process of socialisation will en-

---

[5] Jersild, A. T., "Emotional Development" in Skinner (ed.) *Educational Psychology*, pp. 53-54.

150
MIT

S.C.E.R.T., West Bengal
Library

able the child to acquire his social status according to his age. and perform the corresponding role. This process starts very early in the child's life. "Beginning in the nursery, the process of socialisation continues throughout life. Among others what must be learned is : the power to inhibit, or to moderate, the expression of unacceptable needs; the ability to transfer cathersis from a prohibited goal object to an acceptable substitute, the habitual and automatic use of a large number of approved action-patterns (methods, manners, and emotional attitudes); and the ability to adopt the schedules (to do things at the proper time, keep appointments, etc.) It is assumed that, having acquired these abilities, the average person will be capable of establishing satisfactory interpersonal relations within the legal and conventional framework of society. When the child begins to behave in a predictable, expected manner it is well on the road to being socialised".[6]

It is not true that all the social potentialities of the child are blossomed from the very moment of his birth. As the child grows up, he becomes acquainted with surroundings and he gets opportunities to come in contact with different personalities and organisations. His social consciousness gradually develops. There are psychologists who believe that a child is born with an innate instinct of sociability (gregarious instinct) and socialisation of the child depends on this instinct. Though instinctive explanation of the social behaviour of the child may not be accepted by all, it cannot be denied that some innate traits like sympathy, love, co-operation and fellow-feeling etc. lie dormant in the child and suitable environments give full flourish to them.

Like other areas of development of the child, social development is also marked by certain stages. The capacity to social responses develops along with learning and maturation. It has been suggested that the two processes of differentiation and integration are also inherent in the various stages of social deve-

---

6. Kluckhohn, Clyde and Rwuary, H. A. (Ed.) *Personalits in Nahns, Socils and enture* Nawyone Alfred A. knopz, 1949 p. 25.

lopment of the child. According to Montagu.[7] "the prolonged period of infant dependancy in man produces interactive behaviour of a kind which within the first two years of the child's life determines the primary pattern of his subsequent social development. It is within this period that he learns to love others; the mother who has consistently, intimately, and lovingly attended to his needs, the father, his brothers and sisters and whoever else has participated in the process of satisfying his needs".

At the nursery school stage, the child is more conscious of his self-importance. Social development during primary school stage, is influenced by social activities organised by the school. Social development depends largely on age, ability, innate traits and environments. As the child advances in age, he grows physically and mentally and he becomes acquainted and adjusted with the social behaviour suited to his age and intelligence. It is found that an intelligent child gets no difficulty in adjusting to social situations. Innate traits, temperament, attitudes of the child influence his social development. Environmental or cultural influences shape the future social life of the child.

Differences in social environment, however, do not automatically produce differences in behaviour. It is a very important principle that (other things being equal), the same person will respond to two situations similarly or differently depending on whether he perceives them to be similar or different. Again, differences in social environment and the way in which they are experienced are very largely determined by the way in which the individual's society is organised.

Dr. Fleming[8] points out "The adolescent who matures successfully may be said to be the one who achieves progress in four fields: (a) the acceptance of one's own self i.e. adjustment to one's appearance and one's capacity; (b) the acceptance of one's self in relation to a group: recognition of the variability of one's status and of the specificity of leadership; (c) the acceptance of others: their differences and the unpredictability of their behaviour; (d) the acceptance of others in relation to oneself: the relativity of friendship and of the means by which one may make oneself acceptable to others".

---

[7] Montagu, M. F. A., "The Origin and Nature of Social Life and the Biological Basis of Co-operation" *Journal of Social Psychology, 1949,* 29, 267-283.

[8] Fleming Dr. C. M., Adolesent at School" 148.

Different Stages of Individual Development

Early philosophical thinkers used to assume that there are distinct stages in individual development — a blossoming of the body, followed by maturing of the emotions and terminated by the growth of intellect. Aristotelian classifications of these stages were even prevalent in the 16th century when the course of learning was from the senses to the imagination and from that to the mind. It was suggested by Comenius in the 17th century in his Great Didactic that schooling should be divided into four six yearly periods in which should be exercised first the senses, then the memory and imagination, next the understanding and the judgment and finally in harmonising will. Rousseau in a dignified way elaborated this and he pronounced "each age and condition of life has a perfection and maturity of its own". He also assumed like Locke that childhood was a period of mental passivity from which there was a gradual escape to mental activity through a successive maturing of faculties. He conceived from birth to the age of two, a child to be "to all intents and purposes an animal — in a state of undifferentiated feeling, scarcely more conscious of himself than in pre-natal life". From two to twelve years, the child reached the level of a savage man—his mind being dominated by the senses and lacking in proper power of reasoning. He was devoid of any moral consideration and his only law was that of physical necessity. The third period of childhood was that of pre-adolescence which lasted from twelve to fifteen. *Boy* was the term deliberately used by Rousseau, as he believed that men and women are not and ought not to be constituted alike in character or temperament and they ought not to have the same education. Boys are to be trained to be complete human beings with world-wide interests, whereas, girls are to be educated exclusively for wife-hood and mother-hood, and would be capable of living a self-sufficient life. Intellect made its appearance and the boy became competent to regulate his actions with a view to future consequences. The fourth period was adolescence, extending from fifteen to the time of marriage at about twenty-five. During these years, sex functions awakened and youth underwent a new birth and true social life began. Soul was added to intellect and sense and beauty, goodness and truth acquired a personal value. Conscience ruled life and virtue became possible. These theories were elaborated in detail in Rousseau's *Enile* and they exercised a strong influence upon educational thinking for many centuries.

But we should not forget that development is a continuous process and that there are no gaps — "the development of the young human being is both more continuous, more complex and highly differentiated than the psychologists of the past used to suppose". The physical and mental functions successively appear but they ripen and pass into higher functions maintaining a continuity. In order to understand the development of the whole personality, it has been, however, conveniently differentiated in different stages — childhood, boyhood, adolescence and adulthood.

CHILDHOOD (AGE 1-6): At this time the physical development is very quick. Within two years the child learns to walk and run (period of toddler-hood). Within a year, the child wants to talk but most of these are mere utterances, though within three years of age, he can use language and he tries to understand the meanings of symbols. After three years of age, the child becomes egocentric and wants to become independent. His senses become developed and he comes in contact with the outer world which appears before him with its different objects and colours and the child becomes curious to know much more about the world outside. He becomes imaginative and ideal-conscious. At this age he becomes very much influenced by his family and begins to imitate things which appear to be good and beautiful to him.

At the age of four, intelligence of the child develops though Pioget holds that the child is very much egocentric at this stage and he is rather emotional, and there is no thinking at all. Susan Isaacs, however, believes that the child begins to think at this stage though influenced by his ego. The child remains busy in play-activities and it is through play that his imagination, his reasoning develop and balance of mental and physical activities are maintained.

Freud however, in his psycho-analysis finds out that the child even has sexuality, though this is quite different in nature from that of a youth, which means reproduction. A child's sex feeling is auto-erotic. A male child loves his mother and a female child her father. It is called Oedipus complex by Freud. Freud did not agree with Stanley Hall that the sexual instinct had its birth at puberty.

The whole structure of the future life of an individual is founded on childhood.

BOYHOOD (AGE 6-12) : At this stage, the child is no longer restless, irritative and egoistic. He becomes settled. He develops the ability to acquire keen and accurate perception. During this period various interests of the child are developed. He begins to admire things and people around him. He begins to imitate persons whom he admires. The most important feature of mental development at this stage is the ability to employ symbols and to make plans according to one's remote goals.

In the mental development, concept and reasoning are extremely significant and the child, at this stage, gets some maturity and gains experience to understand things and the reasoning behind their working. His memory and attentiveness greatly increase. Though the boy is capable of abstract thinking it is not so developed as it is in adult-hood.

It has been observed that a child is egoistic but when he is a boy, his mental development is closely associated with social activities. This is known as "gang age" of the child. When the child is young, he is more occupied with his personal needs, and interests, but when he grows up, he is able to understand the needs and interests of others and thereby begins to understand the social problems. Abstract concepts can be better understood at this stage when they are explained in the light of concrete experiences. Another feature of mental development at this age is creativeness. It is the age of mastery and achievements. Environments should be favourably created for developing creativeness, sociability, acquisitions and self-expression of the child.

Dr. C. N. Fleming reports the observations of Stanley Hall in *Adolescence* as follows: "The years from about eight to twelve constitute a unique period of human life. The acute stage of teething is passing, the brain has acquired nearly its adult size and weight, health is almost at its best, activity is greater and more varied than ever before or than it ever will be again, and there is peculiar endurance, vitality and resistance to fatigue. The child develops a life of its own outside the home circle and its natural interests are never so independent of adult influence. Perception is very acute and there is great immunity to exposure, danger, accident, as well as to temptation. Reason, true morality, religion, sympathy, love and aesthetic enjoyment are but very slightly developed. Everything, in short suggests the culmination of one stage of life as if it thus represented what was once, and for a very protracted and relatively stationary period, the age of maturity in some remote, perhaps pigmoid, stage of human evolution, when in a warm climate the young of our species once shifted for themselves independently of further parental aid."[9]

ADOLESCENCE (AGE 12-18): The term 'adolescent' is commonly used with more than one connotation. In its simplest sense, it is applied to those within the age group which is developing from later childhood to adult status. It refers roughly to young people of chronological ages between twelve and twenty or more accurately, as Dr. Fleming points out "to those who are physiologically old enough to have experienced puberty but not yet sufficiently mature to have developed the physical stability of adult life". The word adolescent carries with it social as well as physiological implications. It refers not merely to the years of physiological maturing but to the period of social and personal development which is commonly contemporaneous with that term of physical change. E. A. Peel says

[9] Fleming, C. N., *Adoloscence*, p. 36

"The divisions between childhood and adolescence and adulthood are not clearly defined. They are in some sense arbitrary for in an individual's emotional development we have a continuous and gradual change".

Physiological Characteristics of Adolescence

With the advent of adolescence various changes appear on human body. The muscles, bones, glands, brain, heart etc. develop. But the adolescents differ in the age at which their growth spurt occurs. The girls increase in weight at about the age of eleven and the boy's spurt happens at the age of fourteen. From the ages of eleven to fourteen, the average increment in length with the girls is greater than that of boys, but from ages thirteen to nineteen their annual increment decreases steadily to such an extent that by the age of fifteen, the boys on the average have become rather taller. "It is very difficult to determine the most satisfactory criteria of physical maturity. Popular opinion commonly accords most importance to the appearance of strong facial hair among boys and the establishment of menstrual discharges and enlarged breasts among girls".

The sex glands develop very rapidly at this time (between the ages of 12 and 15) and their hormones bring about great changes in the activity of the whole organism, including the cerebral cortex. Changes in the voice, appearance of hairy growth on the face of the male and in particular places of both the male and the female and changes in the shape of the body take place. The sex hormones increase in quantity and influence the development of sexual characteristics and functions but they also act upon the pituitary gland and cause a reduction in production of its growth hormone. Premature sexual development is, therefore, followed by premature cessation of bodily growth. But we cannot deny variations in these developments of adolescence. "Even more startling to adolescents is the appearance of menstrual or seminal discharges in the case of girls and of boys respectively and the less obvious accompanying variations in pulse rate, blood pressure and basal metabolism..........................with the establishment of menstruation, there comes in girls a stabilising of physiological functions and an approach to adult levels — a relative cessation of the rise in blood pressure, a decline in pulse rate and a fall in basal oxygen consumption" — Fleming.

The years of adolescence are years of physiological learning in which certain physical adjustments are effected by the inescapable processes of bodily development. "They are also years of social learning —in which the child gradually awakens to an understanding of the social meaning of maturity".

Mental Characteristics of Adolescence

There are some psychologists who believe that adolescene is the period of the highest development of the intellectual abilities. Mental development increases more steadily with chronological age than does physical growth. "Little relation has been found, however, between periods of acceleration in mental and in physical growth, and intellectual growth on the average has been shown to proceed more steadily than physical growth and to continue after physical growth has ceased". Dearborn in *Harvard Growth Study* finds out "that mental growth continues to about thirty years of age and that approximately two per cent of average mental growth may take place at twenty-one or twenty-two". The level of approximately fifty per cent of adult status seems reached by about the age eleven, and growth appears to be still continuing at eighteen to twenty years".[10]

In the early years of the 20th century even emphasis was laid upon the abrupt changes in the physical, intellectual, emotional and social aspect of life at the dawn of adolescence. It was assumed that with the alterations in physical structure in adolescence, similar dramatic modifications occurred in connection with memory, reasoning, imagination and the emergence of specific aptitudes for the chief types of adult vocational activities. The ability to memorise was supposed to reach its peak in childhood and to suffer a decline after puberty. Abstract reasoning ability was thought of maturing all of a sudden in

---

10. Brooks, F. D., "Mental development in Adolescence, *Review of Educational Research*, VI, February 1936, pp-85-101.

early adolescence and imagination developed from phantasies of childhood to constructive activities of adult life.

There is sufficient reason to believe that like the growth of intelligence, the development of ability to memorise and to reason corresponds quite closely to chronological age and is relatively insensitive to the onset of puberty. "Tests of reasoning ability have shown that from the age of about seven years onwards all forms of syllogistic thinking are employed by children and that the chief difference between old and young thinking is found in its content of experience and special interests rather than in the nature of the process employed".[11]

Regarding personal and social development the adolescents differ in rate of development as well as in regularity of growth. It is evidently true that the adolescents come from homes with differing attitudes towards themselves as individuals and towards the importance of acceptance as members of specified social groups. They vary in their ambitions, expectations and wishes. All of them, however, are experiencing certain of the physical changes accompanying pubescence, and all of them are engaged upon the problem of adjustment consequent on their emerging status as adults in a world of men and women.

Some Theories of Adolescence

(a) Adolescence is a recapitulation of childhood. James maintains that adolescence is the repetition of childhood. Child develops physically, mentally and emotionally very quickly and similar spurts are seen during adolescence. The restlessness of childhood becomes pacified in boyhood and a boy becomes integrated and patient. He adjusts with environment and develops steadily but during adolescence he becomes restless and fails to adjust with the environment properly because of sudden changes. The sex consciousness lying dormant in childhood becomes fully aroused. It is to be admitted, however, that the potentialities in childhood may be developed in adolescence and be modified but cannot re-appear in the same forms. The development of the young human being, at this period of adolescence is not a re-capitulation of the evolution of the race but it is more continuous, more complex and more highly differentiated.

---

[11] Burt, C., "The Development of Reasoning in School Children", *Journal of Experimental Pedagogy* V, 1919. pp. 68-77.

(b) adolescence is a new birth. Stanley Hall, as reported by Dr. Fleming holds "adolescence is a new birth, for the higher and more completely human traits are now born ....The child comes from and harks back to a remoter past; the adolescent is neo-atavistic and in him the later acquisitions of the race slowly become pre-potent. Development is less gradual and more salutary, suggestive of some ancient period of storm and stress when old moorings were broken and a higher level attained ....Important functions previously non-existent arise ....Every step of the upward way is strewn with wreckage of body, mind and morals ....Sex asserts its mastery in field after field, and works its havoc in the form of secret vice, debauch, disease and enfeebled heredity, cadences the soul to both its normal and abnormal rhythms, and sends many thousand youths a year to quacks, because neither parents, teachers, preachers nor physicians know how to deal with the problems. There are new repulsions felt toward home and school, and truancy and runaways abound. The social instincts undergo sudden unfoldment and the new life of love awakens. It is the age of sentiment and of religion, of rapid fluctuation of mood, and the world seems strange and new. Interest in adult life and in vocations develops. Youth awakes to a new world and understands neither it nor himself..............character and personality are taking form, but everything is plastic. Self-feeling and ambition are increased, and every trait and faculty is liable to exaggeration and excess. It is all a marvellous new birth".

Needs of Adolescence

W. I. Thomas in his *'Unadjusted Girl'* reports that delinquency was not a consequence of perverted personal characterstics — physical or psychological but an absence of adjustment by the individual to the demands of society and as a sequel to the failure of society to satisfy the basic needs or 'wishes' of the individual. The conception of 'need' is essentially more social in its implication than is a description of human behaviour in terms of instincts inherited from hypothetical animal ancestors and conceived as innate, unmodifiable and common to all members of the species.

(a) NEEDS OF FREEDOM AND ACTIVITY : During adolescence various changes—physical, mental and emotional take place and the adolescent approaches fully developed personality. From chidhood he remains dependent on others and so the needs of freedom and activity become preponderant. He wants to be free and self-disciplined. Self-respect and self-confidence arise in him and he wants to be respected and dependable.

(b) NEEDS OF BEING ACCEPTED BY HIS GROUPS : This is also very important. There is need for love in the intimate circle of home, for admiration among his contemporaries and for appreciation from employees. "Experience of his acceptance in the years of infancy and childhood leads to the sense of security which later forms an important ingredient in mental health".

(c) NEEDS TO LEARN NEW THINGS : to experience fresh adventures. This is closely connected with the impulse of the human organism towards growth and development and is not limited merely to physical growth. In the adolescent and adult it extends potentially to the limit of the knowledge of the tribe, the nation or the race. Dr. Fleming says "The basic psychological needs of acceptance, of opportunities to show tenderness, of adventure, of responsible contribution to the group and of some understanding of the nature of universe are satisfied in different fashions of different ages and in differing social groups". She also expresses it very nicely : "when children mature into adolescence, closer bonds may be formed between contemporaries of the same sex and this may be followed by a love interest of a more passionate kind in adults of the same or opposite sex — leading in turn to the selection of a mate".

The need for adventure carries with it the demand for a continuous enlargement of experience and the search for an understanding of the meaning of life.

Need for Sex-education

Stanley Hall believes that children have no sexual life and sexual excitement, needs and gratification of a sort suddenly appear in the years between twelve and fourteen. Freud, on the other hand, thinks that it is biologically impossible that children are born without genital organs. Actually what happens is that the sexual needs are awakened at the age of puberty in the form of reproductive function.

It is indeed one of the most important social tasks of education to restrain, confine and subject an individual to control (itself identical with the demands of society), the sexual instinct when it breaks forth in the form of a reproductive function. In its own interests, accordingly society would postpone the child's full development until it has attained a certain stage of intellectual maturity since educability practically ceases with the full onset of the sexual instinct. Without this the instinct would break all bounds and the laboriously created structure of civilisation would be swept away. Freud believes "that the task of moulding the sexual will of the next generation can only be carried out by beginning to impose the educator's influence very early, and intervening in the sexual life of children before puberty, instead of waiting till the storm breaks".

Sexual knowledge and skill are not instinctive and education is as much needed in these fields as in any other. Sex knowledge should be provided by wise and well adjusted parents, teachers or physicians. An intelligent knowledge of sex is not sufficient. "More important are attitudes towards sex, which may be distorted by conditioning or by the adoption of the points of view of mal-adjusted parents, and which remain unremedied because of the prevalence of repression in respect to sexual topics".

Because of the earlier physical maturity of girls co-education seems undesirable. But a careful follow-up study of a large group of pupils from the ages of five to sixteen in the co-educational recreational clubs attached to the Merrill-Palmer School in Detroit shows that there are three stages in the free choice of companionship among school mates: (a) one involving little sex discrimination in attitudes, contacts or choice of associates during the years of five to eight for girls and five to eight and a half for boys; (b) one characterised by preferences for playmates of one's own sex from the ages of eight and a half to thirteen and a half in case of girls and nine to fourteen in the case of boys, and (c) one accompanied by attraction towards and companionship with members of the opposite sex from fourteen to sixteen for girls and from fourteen and a half to seventeen for boys.

Educational or recreational segregation of the sexes could be supported on the grounds of differences in the rate of *Social sex* development only if it could be shown that all boys (or all girls) matured at once and quite to the same extent.

It is very significant, therefore, that serious consideration should be given by the parents and teachers of adolescents to impart sex education. In the years of adolescence physiological changes render procreation for the first time possible and social pressure suggests changes in the approved behaviour of girls and boys. Sex-eduction is social education. Information as to what is meant by being grown-up, should be provided. Through direct observation, through books and films, through conversation, through the implications of fragments of traditional games in which the typical life-dramas of a community are enacted by tiny boys and girls, sex-education may be given. Sex-education, however, does not consist only in giving information of surprising physiological experiences such as nocturnal emissions or menstruation which come to most boys or girls in the years of their teens. It does not mean showing films depicting the life history of amoeba or the frog or diagramatic portrayals of the route taken by human spermatoza. Still less is it a matter of mere discussion of secondary sexual characteristics such as changes in physical appearance and structure.

It is important that the adolescent be helped to realise that this problem is bound up with a much larger one of human relations.

Dr. C. M. Fleming suggests; "An extension of wholesome heterosexual contacts in genuinely co-educational day schools or clubs is now known to be more efficacious as an aid to healthy maturing than the violent exercise formerly advocated for boys or the parental whippings administered to girls. In this connection also it is coming to be believed that wiser situational treatment can reduce many of the problems of adolescent behaviour".[12]

We cannot but admit the need of sex-education but we will rather try to understand in this connection the difference between sublimation of sex urge and its natural development.

Sublimation differs from development. Development is a natural spontaneous process in which primitive impluses like sex naturally pass through various phases from infancy to adult life, changing their form from time to time not primarily as a result of environmental conditions but as a result of maturation. Mc Dougall in *Social Psychology* points out that the primitive potentialities or "instincts" can be diverted towards social ends and that is sublimation.

Sublimation differs from natural development in that it is the re-direction of our energies, conscious and unconscious, in conformity with social demands.

"But this" as Hadfield observes "lays an obligation upon society not to make too severe demands upon the individual for this must inevitably result in either repression or rebellion. It also places the community under an obligation to provide opportunities for the expression and sublimation of all these tendencies in human nature, if mental health and happiness are to be attained. More than all it lays upon the parent the delightful task of providing for the child that atmosphere of protective love in which it will find confidence to face life, free to develop, free to love, free to live without fear, and accepting frustration with good grace".[13]

Heredity and Environment

In order to understand the influences of the biological and the environmental factors in the development and growth of human life, knowledge of the nature and principle of heredity is very helpful. It is commonly believed that heredity means resemblance to parents. This popular belief, however, is not quite correct. The germ cells are not manufactured by the body cells of the parents and are not modified by the acquisitions. Parents transmit to the offspring only the traits that they themselves receive by inheritance. If children resemble the parents, it is because both generations developed from the same stock of germ cells and not because of transmission of the actual parental characteristics. (Read Physical Development — Genetic Background in Chapter 11).

---

[12] Fleming, C. M., *Adolescence*, p. 233.

[13] J. A. Hadfield. *Psychology and mental Health.*, pp. 434-435.

Jennings in 1930 pointed out that brown eyed parents have brown-eyed children but they sometimes have blue eyed children. Why the variations? Mendelian laws explain these variations by the concepts of dominant and recessive traits.

George Mendel (1822-1884) was a monk of Austria. The rules for hereditary transmission as discovered by Mendel are known as Mendel's Laws.

There is the law of segregation and the law of independent assortment.

In one of his experiments Mendel used two types of peas — one was the tall type and the other, the short type. When the tall type and the short type peas were cross-fertilized, it was discovered that the hybrid peas for the first time were all tall. But when the hybrid peas were allowed to be self-fertilized, the crop produced in the second generation showed that there were three tall pea plants to one short plant. The ratio was 3 : 1.

In the third generation, it was found that all short type of peas produced peas of their own variety, showing that in the third generation the hybrid element was segregated.

It was also discovered that 1/3 of the tall type of peas produced peas of their own type. But the remaining two thirds of the tall type peas produced both tall and short types in the ratio of 3 : 1.

Mendel found that in the third generation of the peas, the ratio was "one true tall to two hybrids, to one true short; or 1 : 2 : 1.

This is illustrated in the following diagram :

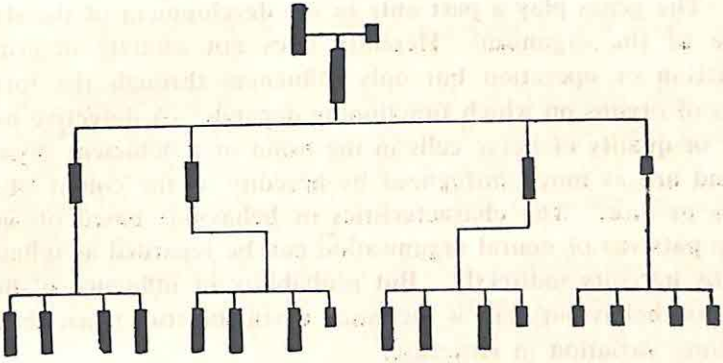


FIG. 3

The "Family Tree" showing the result of crossing tall and short varieties of peas. Tallness is dominant and is indicated by the longer lines.

In this particular experiment the dominant trait was the tallness and the recessive trait was shortness.

The dominant trait in the first generation remains dominant, in the second generation, it is present in 3 : 1 ratio and later in the third generation the ratio is 1 : 2 : 1.

According to Higginson there are three primary features of Mendel's Law. The first feature is called the principle of unit traits which indicates that "each simple, heritable feature observable in the adult offspring is attributable to the presence of a hypothetical unit character (or characters) present in the germ cell". The second feature of Mendel's Law is the principle of dominance. According to this principle when two traits or characters become paired, one of them becomes dominant. Further the dominant trait is stamped upon the offspring. The third principle associated with Mendel's Law is that of segregation, according to which "unit factors always retain their individuality".

Mendel's experimental laws are helpful in the growth of a new science known as genetics. Mendel's 'elements' were supposed to be responsible for the laws of segregation and of independent assortment. These elements were actually the chromosomes and genes.

The genes play a part only in the development of the structure of the organism. Heredity does not directly determine function or operation but only influences through the formation of organs on which functioning depends. A defective number or quality of nerve cells in the brain or a defiicient thyroids gland are as much influenced by heredity as the colour of the eyes or hair. The characteristics of behaviour based on intricate patterns of neural organisation can be regarded as influenced by heredity indirectly. But probability of influence of heredity on behaviour trait is increased when the trait is ascribed to definite variation in structure.

It is very difficult to find out traits which are entirely due to heredity. Similarly, it is not easy to find out traits which are entirely the results of learning and the action of environment. The very existence of behaviour depends on organic structure for its performance and so no trait is uninfluenced by heredity. Since all characteristics may be modified by environment, all depend upon environment. It is an admitted fact that "every characteristic of man is due to the development of certain original material under certain environmental conditions". There is no opposition or antagonism between heredity and environment. Behaviour is the joint contribution of both that we must study.

Environment is not a simple entity and the term 'environments' will be more exact.

Prenatal environment has been described in Chapter 11. Injuries and diseases are very influential environmental factors which may completely change even the characteristics that seem most fundamentally predetermined.

Physiological environments such as food, light, heat, exercise and rest etc. provide important influence on certain traits. In the psychological sphere, the social and cultural environment — the linguistic quality of home, parents' interest and participation in intellectual pursuits, formal schooling etc. — cast a great influence in affecting traits. "Social environment affects our behaviour only by way of our bodies, because we are dependent on sense-organs for perceiving environmental influences and on our nervous systems for 'interpreting' them. Social influences profoundly affect the ways in which human bodies behave."[14]

We cannot overlook the emotional environment also. In the midst of quarreling parents, the child may develop home-grown fears and he becomes greatly modified by this.

Economic environment is also not less influential in modifying the behaviour of the child.

Basic anatomical and structural characteristics may be relatively fixed and environmental variations are influenced by circumstances of great intensity. "Traits that are more functional, complex and less essential to life are found to be more plastic, being modified by environmental factors".

Some direct evidences of heredity are considered below:—

FAMILY HISTORY AS EVIDENCE: An early study of Jukes family reported by Dugdale in 1877 shows that in a family started by feeble-minded sisters in the 18th century, there were 110 mentally defective and 83 intemperate members, while only 171 of a total of 1,258 were described as industrious.

The history of Kallikark family described by H. H. Goddard in 1912 is very interesting. Martin Kallikark, a soldier, had an illegitimate son by a feeble-minded girl, from whom 480 descendants were traced. Of these 143 were feeble-minded, 292 of uncertain intelligence, 36 illegitimate, 33 prostitutes, 24 alcoholics, 3 epileptics, and 3 criminals, while only 46 were known to be normal individuals. Later Martin Kallikark married a normal girl of good family from which union 496 descendants have been traced. Of the second line of descent only 1 was feeble-minded, 1 sexually loose, 2 alcoholic and 1 had religious mania, the remaining 491 being normal, many of whom became successful business men and eminent members of the professions.

In putting faith on the family histories a very important fact has been ignored that the children of the Kallikark famlly were all reared up in Kallikark environment. The results obtained by researches may be due to the influence of social surroundings on the defective genes. It is argued, therefore, that the human family studies are valueless because of the impossibility of controlling environments to a sufficient degree. Some of the traits of the Jukes or the Kallikarks may really be due to inheritence but other proofs are required to establish the fact.

---

[14] Theodore M. Newcomb., *Social Psychology* p. 48.

THE CONSTANCY OF TRAITS : If a characteristic, which can be measured, remains relatively unchanged throughout a long period of an individual's life inspite of varying circumstances experienced by the individual, then the characteristics is considered to be a fairly fixed one. On the other hand, if a trait fluctuates due to environmental changes, it may be considered to be relatively plastic.

In the field of physical traits, height and weight offer good examples of comparative fixity and plasticity. The short child at five years of age usually continues to be the short child at ten, and the short adult.

The determination of constancy of intelligence is a good problem of research. It is found that in a series of retests of the same children, the Intelligence Quotient shows an average fluctuation of four or five points. This is a small variation. The difference between the feeble-minded child and the average child is one of about forty to fifty points, and the difference between the normal individual and the average college graduate has been variously estimated as from fifteen to twenty points. The mentally brilliant child at six years of age maintains his superiority to the average in an approximately constant ratio. The dull child remains dull within a narrow range of variation. Terman[15] in 1921, reporting on the results of a limited number of retests of individuals, remarked "speaking roughly, fifty per cent of the I.Q.'s found at a later test may be expected to fall within the range between six points up and four points down .... It is evident, therefore, that the I.Q. is sufficiently constant to make it a practical and serviceable basis for mental classification". C. M. Fleming[16] however emphatically says that "There seems reason to believe that the longer children remain in unstimulating environments, the lower becomes their performance in tests of what is commonly called intelligence and that the earlier they are transferred to intellectually stimulating situations, the higher is their subsequent measurable response". Different investigations made by Jones, Stoddard and others emphasise the possibility of changes resulting from environmental influence. "At the present time, however, we must be content with the knowledge that from an early age, general mental ability is only moderately modified by ordinary variations of cultural environment"—Shaffer.[17]

---

[15] Terman, L. M., *The intelligence of School Children*, p. 148.

[16] C. M. Fleming, *The Adolescence at School*, p. 111.

Adopted Children

Regarding the constancy of Intelligence Quotient it has been contended by the critics that this constancy may be due as much to uniformity of environment as to the operation of hereditary factors.

A research was made by Freeman, Holzinger and Mitchell in 1928 on 401 foster or adopted children. Of these 74 were tested before adoption at an average age of eight and again tested a year later. The average I.Q. was 91.2 before adoption and after four years interval it was 93.7 i.e., the group gained 2.5 I.Q. points on the average. It is also interesting to note that those children who were placed before their eighth birth-days gained 5.2 I.Q. points. Freeman stated that the gain for the whole number of children was 7.5 points, for those in superior homes, 10 points and for those in less favourable homes, 5 points. The pre-test I.Q. of the children entering the better homes was 95, and that for the children adopted in the inferior homes was 88. It may be concluded, therefore, that children of initially good ability gain more from environment than do children of initially poorer ability.

It may also be observed that the changes found in the intelligence of adopted children are real but small. No extremely dull child was made normal, no merely normal child was made a genius by the environmental changes. The research on adopted children confirms the conclusion that mentality is a family fixed trait, but denies the view that intelligence is wholly native and hereditary.

---

[17] L. F., Shaffer, *The Psychology of adjustment*, p. 351.

Study of Twins

Galton presented histories of twins, who behaved throughout their lives like clock work automata turned out by the same factory and wound up at the same moment. It is said that circumstances of life are to man what rocks and winds and currents are to a ship, merely accidents that make his qualities manifest but having nothing whatever to do with producing them.

Closeness of family relationship also indicates heredity influence. I.Q. correlation between identical twins is + 0.90, between fraternal twins it is + 0.70 and between siblings it is + 0.50. In the case of identical twins even brought up separately in different environments, the I.Q. correlation will still be + 0.77.

There are generally two kinds of twins — fraternal twins, who develop from the simultaneous fertilization of two ova, and identical twins who develop from a single fertilized ovum which has divided early in embryonic life to form two individuals. It is supposed that the fraternal twins do not have more like heredities than do brothers and sisters. They may be of the same sex or of different sexes. Identical twins on the other hand, since developing from the same germ cells have identical heredities.

A study of 20 pairs of identical twins ranging in age from 12 to 60 years reared apart reported by Holzinger (1937) and Newman (1940) showed that 16 out of the 20 pairs who had about the same amount of formal schooling (within a year or two after separation) possessed the average I.Q. difference of five points; for the 4 of the 20 pairs which had markedly differing educational back-grounds, however, the I.Q. differences ranged between 12 and 24 points, the average differences being 18. It was also found that in each of these 4 pairs, the twin with the better educational back-ground had the higher score.

We may summarize by saying that differences in ability paralleled differences in educational opportunity but that idential twins in different environments nevertheless resembled each other more closely than do many children of different heredity brought up in similar environments.

Holzinger concludes that heredity is from four to seventeen times as important as environment in determining variability in anatomical traits, and that heredity is twice as important in causing variation in intellectual traits. In regard to the personality traits measured, environment is the overwhelmingly more significant factor.

Barbara Burks points out that home environment contributes 17% of the variance in I.Q., parental 33% and contribution of innate heritable factor is 75% to 80%. Sandiford holds "with intelligence as measured by intelligence tests, the contribution of heredity is about four times as potent as that of environment". "But to try to assess either of the two dypes of influences as percentages, even in individual cases, would be merely rhetorical qualification".

Behaviourists like Watson and others lay more stress on environment and believe that different circumstances and different environments can create different personalities born of the same heredity.

It is useless to question the relative importance of heredity and environment. Heredity and environment are correlative to each other — "they are like" as Sandiford remarks "the engine and the gas of the motor car each helping the other".

We conclude in the words of Nunn — "the organism is so much one with its physical and spiritual environment that the two cannot be separated. For, the fundamental truth is, for us, that it is a centre of creative energy which uses endowment and environment as its medium so that the elements it receives from nature do not themselves make it what it is, except in so far as they are the bases of the free activity which is the essential fact of its existence". The educators should explore the possibilities of both heredity and environment and utilise them for the child's development.

REFERENCES:

M. C. Connel, T. R., "The General Nature of Growth and Development" — *Educational Psychology*, ed. Skinner.

Madigan, M. E., *Psychology, 1957.*

G. Thomson, *Instinct, intelligence and character.*

L. F. Shaffer, *The Psychology of Adujstment.*

C. M. Shaffer, *Adolescence.*

A. T. Jersild, "Emotional Development" in Skinner (ed), *Educational Psychology* pp. 53-54.

Kluckhohn, Clyde and Murray, H. A. (Ed)., *Personality in Nature, Society and Culture*, New York, Alfred A. Knopt, 1949, p. 25.

Montagu, M. F. A., "The Origin and Nature of Social Life and the Biological Basis of Co-operation", *Journal of Social Psychology*, 1949.

Brooks, F. D., "Mental Development in Adoleseence", *Review of Educatonal Research VI* February 1936, pp. 85-101.

Burt C. "The Development of Reasoning in School Children", *Journal of Experimental Pedagogy*, — 1919. pp. 68-77.

J. A. Hallied, *Psychology and Mental Health.*

Theodore M. Newcom., *Social Psychology.*

Terman, L. M., *The Intelligence of School Children.*

P. Nuun, *Education: Its Data and First Principles.*

Questions:

1. Describe the main stages of human development and determine some characteristic features of each stage.
2. State the major features of the child's physical and mental development and how they are related to other phases of his growth
3. Can adolescence be regarded as a re-capitulation of the first period of life?
4. What are the physical, mental, social needs of the adolescent? Can these needs be statisfied in a multipurpose school?
5. Adolescence is described at ten as a period of storm and stress; 'strife and strain' — Do you agree? Give reasons for your answer.
6. Discuss the relative importance of heredity and environment in the development of a child.
7. What part is played by heredity in the education of a child ?
8. Do children inherit specific traits of their parents?

CHAPTER — III

Perception, Memory, Imagination, Attention and Interest

Sensation, Perception and Imagination

Sensation and perception constitute important aspects of of mental activity. Sense-organs are the gates of knowledge. Sensation is an experience bringing certain change in the individual when certain stimuli affect the sense-organs. Sully defines, "Sensation is a simple physical phenomenon resulting from the stimulation of the peripheral extremity (i.e. outer end) of an affarent nerve when this is propagated to the brain."

The nature of sensation depends upon the five senses affected by different stimuli. Changes in the temperature or objects coming in contact with skin produce tactile sensation, chemical substances dissolved in saliva or other liquids, coming in contact with the tongue give rise to gustatory sensation, chemical substances in gaseous form affecting the nose produce olfactory sensation and similarly air-vibrations affecting the ear and ether vibration affecting the eye produce auditory and visual sensations respectively.

Three factors like stimulus, nervous system and mind are involved in sensation. Stimulus is the main cause of sensation as it stimulates or excites the sense-organ and this stimulation is carried through the affarent nerves to mind (brain) Different kinds of sensations take place due to different sense-organs and the brain or the mind receives them passively.

Sensation is objective in the sense that it requires stimulus and makes the individual respond to the stimulus. Sensation depends on the intensity, and duration of the stimulus. In-order to be effective, sensation must have the necessary amount of intensity. When a sound, for example, is very low or less intense, it fails to create any sensation; again, if a sound is too loud i.e. over-intense, it becomes painful. Less durable or more durable stimuli similarly fail to produce desirable sensations. Moreover, sensations are unnoticed to the extent they are unattached with any meaning. The moment the meaning is attached to a sensation, it takes the form of perception.

Modern research has added three more to the list of sensations derived through five sense-organs and they are organic, kinesthetic and bodily equilibrium. Organic sensation is experienced through the stomach and the back of the throat stimulated by churning of the walls of the stomach and certain chemical changes in the back of throat. Kinesthetic sensation is derived through muscle spindles and certain tendons in the joints being stimulated by the pressure on the muscle spindles and the tendons about the joints. Bodily equilibrium is also another form of sensation in which, semi-circular canals of the body are affected by the disturbance in the fluid of the semi-circular canals.

Perception is not possible without sensations. According to Brown and Gilhousen, "A sensation is an awareness of the bare quality of experience and arises directly from the stimulation of a sense-organ." As regards perception, they observed: "A perception involves an awareness of objects and events that are present in the immediate environment .... A perception is determined in part by what you sense, but it also depends upon past experience (learning), interest or motivation, alertness and selective attention".[1]

Perception is the knowledge which is sensation plus meaning. It is not possible to separate sensation from perception.

Sensation and perception are two aspects of a single mental process. The process of perception is complex, it is the result of a configuration or gestalt. When we perceive a house the configuration of the house comes first in our attention and then later on we go into details as regards its shape, size, colour etc. Perception is greatly influenced by the direction of our attention. Attention is selective. In perception the object we perceive is selected. Perception is thus a selective behaviour. "A hungry woman, restaurant-bound in a strange city pays scant attention to the attractive shop windows, which at other moments she might stop to admire." It is wrong to assume that perception is determined simply by what is objectively present and by the nature of the human eye and brain, and perception is purely a *passive* affair, a matter of registering "what is there".

---

[1] Brown, W. and Gilhousen, M. C., *College Psychology*, 1949.

There are at least three kinds of active processes at work in most perceptions.

i) OMITTING : Perception involves a good deal of omitting. At almost every moment of our waking life, countless stimuli might be noticed, but not actually perceived. It is only by hitting upon a few salient features and ignoring the others that we 'make sense' of most situations. But it must be admitted that, what is omitted from perception is in large part determined by the nature of the motivation which is operating.

ii) SUPPLEMENTING : Perception involves adding or supplementing, as well as omitting. Particularly in the hasty glimpse, it is common to 'round out the picture' by filling in details not in fact present but which so to speak, should be there and are thus assumed to be there. Bartlett's experiments on the recall of pictorial materials and of stories show that both omission and supplementing invariably occur (1932). Studies of the way in which rumours grow point to the same tendencies. (Allport and Postman, 1947).

iii) STRUCTURING : The most important kind of active process that goes on in perception is that of organising, or structuring, whatever is available to be perceived.

Perceptual organisation depends on two factors, subjective and objective.

Objective factors involve the compelling feature of the situation which results in the same kind of perceptual structuring for all 'normal' individuals. Subjective factors are those which vary with individual psychological conditions. Conditions of motivation have particularly important effects upon the ways in which we perceive things; we are apt to structure our perceptions in terms of our hopes and fears. Subjective factors are imposed upon the situation by the perceiver.

Structuring provides integrated meaning to the situation. Without structuring, the individual would be in a condition of perceptual chaos.

iv) FRAME OF REFERENCE : A frame of reference functions as a perceptual context which exercises a selective influence upon the way in which something is perceived. Perception is a form of behaviour in which objects are 'sized up' in preparation for other forms of behaviour. If you 'size up' a house as being too small, or a man as being rude, or some food as being unpalatable, you do so in terms of certain standards of size, rudeness and palatbility. The frame of reference in which a person perceives something determines his motivated response to it .

THE GESTALT THEORY OF PERCEPTION : Gestalt is a German word which means 'whole made of related parts'. According to this theory of perception a body even perceives an unfamiliar object as a form or figure. In other words, this is an innate tendency within the individual to organise his sense-field and to perceive objects in his environment as a whole. It is believed by the classical psychologists that our experiences are composed of elements of sensation. But the Gestalt psychologists emphasise the fact that our sensations get organised into a pattern or a form and then we perceive. The Gestalt view therefore insists on 'form' as an important content of perception. The atomistic approach to perception is opposed by the Gestalt psychologists. A melody played in a new key may have no element in common with what is already known, yet be instantly recognised.

FIGURE AND GROUND : Perceptual structuring nearly always involves some sort of distinction between figure and ground. That part of the total stimulus situation which 'stands out' is figure; the remainder, against which the figure appears, is ground. The ground is necessary to figure, and the nature of the ground profoundly influences the nature of the figure. What is actually perceived then is not just figure but figure-in-relation-to ground. "The same square of paper which looks blue-green against a yellow back-ground is seen as yellow-green against a blue back-ground."

In this form of Gestalt structuring (spatial), the following factors are very important : (a) proximity, (b) similarity, (c) continuity (d) inclusiveness and (e) familiarity (see chapter on Learning).

Woodworth holds that in every perceptual experience, there are sensory elements, but they do not constitute a percept unless the organism makes such a perceptual reaction. Woodworth concluded that the perception of A and B as a pair served as a basis for the connection between them. Not their proximity, not the formal will to learn, not any special attitude, but the act of perception itself established the connection. Perception was interpreted not as a state within which sensation exists but as a reaction.

Imagination :

Imagination is an ability to evoke and use mental images. We form mental images of absent objects, past events as well as of things that have actually never existed. Mental images are the means by which one can visualise what is not before one's eyes. When he lies in his couch in a vacant or pensive mood, the poet sings of what he visualises in the eyes of imagination—the daffodils seen long before dancing in the air.

The images may be classified according to their nature. When one visualises the appearance of an object, or has an auditory image of one's friend's voice, one experiences memory image. Again, when a person has a mental picture of a man with his face like that of a goat, it is said that he has formed a constructive image. Thus, images are of two types : memory image and constructed image. Memory images reproduce or resemble something, experienced in the past, but constructed images are entirely novel. Though a constructed image is novel as a whole its various components are based upon the past experiences of an individual. In the example given above of the constructed image, a person who has never seen a goat, cannot have a constructed image of a face like that of a goat. The novelty of the constructed image is due to the fact that a person is able to combine the elements of his past experiences and form a new image.

A study of images has shown that they are associated with our different senses.

IMAGES AND SENSATIONS : Sensation occurs only when the sense-organ concerned has stimulation. In the case of images it is not necessary that there should be stimulation of the related sense-organ. Images can be formed without the need of sense organs. One can have visual image in the dark. Secondly, sensations end or become modified when stimulation ceases or changes. In other words, sensations are dependent entirely on stimulations and their duration.

Images are independent of stimulations. Images can be created at will. In other words, our will plays the same role in the case of images as stimulation does in the case of sensations. Lastly, images are less vivid than sensations.

Inspite of these differences, there are some who consider images as sensations and sensations as images. Hallucination is a kind of image but sometimes it is regarded as a sensation. cording to Titchener, "Kinaesthetic images are extremely dif- Ac- ficult to distinguish from kinaesthetic sensations". He further says, "It is also a matter of common knowledge that in certain pathological states, the image may become what is called hallu- cination, that is, may take in all the characters of clear and in- tensive sensation"[2]. Hobbes, however, denied the existential exis- tence of an image. He holds, "There is nothing without us (really) which we call an image or colour ....the said image or colour is but an apparition unto us of the motion, agitation, or alteration, which the object worketh in the brain, or spirits, or some internal substance of the head"[3]. He believed that after the external object had ceased to act upon the sense-organ, the motion in the brain might continue. Such residual or 'decaying' sensation constituted the material of memory and imagination.

---

[2] Titchener, *A Textbook of Psychology*, p. 199.

[3] Hobbes, *Human Nature*, II, 4.

The functions of images: (1) Without images thinking is not possible. Images are the elements of thinking about all kinds of objects, events etc., without being conditioned by time and space. (2) Images help to visualise a thing in its absence and remember it. (3) Images are also effective in abstract thinking. This time an image becomes in idea, abstract and universal in nature. (4) Images are helpful in creating, in solving scientific problems and in enabling an individual to appreciate aesthetic beauty.

Imagination occupies a very important place in education. Teachers should provide opportunities to pupils for the use of their imagination. Lawrence K. Frank[4] has discussed the place of imagination in education. According to him as the child grows, "his awareness and his perception enlarges, he begins to notice, as we say, what he previously ignored, to recognise people and objects. He also begins to perceive the patterned sounds of language and to orient himself by those sounds, which means he has begun to use imagination........." Frank also believes that the potential imagination of children should be drawn out and steps be taken to discipline and develop the imagination according to the unique individuality of the children. Efforts should be made to develop imagination in children by means of education.

Though imagination cannot be rigidly classified as there is very little difference between the classes, for convenience the following classifications have been made:

(1) Passive and Active Imagination: when the images automatically arise in mind and the mind passively surrenders to them e.g. in day-dreaming, phantasy etc., imagination is passive. When voluntarily one imagines about something then imagination is active.

(2) Creative and Receptive Imagination: In creative imagination an individual weaves the web of image from within and

---

[4] Frank, L. K., *Imagination in Education*, 1956.

creates something new. The great poet Kalidas, for example, with his creative imagination wrote *Meghaduta*. An individual when he receives the images from the reading of the *Meghaduta* and imagines, his imagination may be known to be receptive.

(3). Intellectual, Aesthetic and Practical Imagination: An individual takes the help of intellectual imagination in framing hypothesis for scientific discovery. An individual takes the help of aesthetic imagination in appreciating the beautiful creation of art. In practical execution of a plan, we take the help of practical imagination. We imagine ways and means for the practical realisation of constructing a bridge or a building.

What sort of imagination is helpful in a child's education? The child generally at an early age gets knowledge through sensation and his images. With the development of thinking, the child uses the images less. Intensity of imagination takes place in adolescence and sometimes the adolescent gets pleasure in imagining something unreal and fictitious.

The child is naturally imaginative and this imaginativeness of the child is to be utilised in education. The child should not be encouraged to read and to listen to fabulous stories as Montersori suggests. These unreal, fictitious, fabulous stories make the imagination of the child so unrealistic that the child fails to adjust to the realities of life and wants to remain engrossed in day-dreaming. The creative and constructive imagination is very much helpful in a child's education. Intellectual, aesthetic and practical imagination should be fully utilised in a child's education.

Memory :

We have seen that all our present experiences are coloured by and have reference to past experiences which have left behind them dispositions. Memory consists of learning, retention, recall and recognition. In memory "that reference to the past which is implicit in all mental activity is more explicit and more prominent than in other acts"[5].

[5] Mc Dougall, *An Outline of Psychlogy*, p. 309.

A child in his process of learning commits to memory certain materials. First the question arises as to what will be the methods of memorisation. There is memory span. The span of rote memory is inborn but it can be extended by learning techniques. The memory span is defined "as the maximum length of a series of elements that can be repeated by the subject after a single presentation". In order to facilitate memory span the learner gives meaning to the materials presented to him. Associations are formed in accordance with the principles of association and Gestalt psychology. In memorisation as it has been stated before, learning or recording the materials, then retaining or remembering the materials over varying intervals of time and then reproducing the memorised materials are needed and at this stage we should enquire into the recall and recognition of learned matter also.

On the memorisation of lists of letters, numbers and nonsense syllables experiments have been made and it has been seen that the learner in increasing his memory span by rote repetition (cf. laws of association and connectionism) is capable of doing meaningful association. This meaningful association helps the learner in combining the materials into single units. Elements to be connected are placed on the same horizontal line and are separated by a fixed distance. The meanings of these associations may not be apparent to the outsider for they arise in the mind of the learner. The underlying meaning of the associations are subjective.

If a sequence of words is presented say, pan, chief, wind sea, boy, car, the learner actively links each by his own association.*

Word called	*Response*
Black	White
Cart	Wheel
Boy	...

These experiments show how helpful the laws of associ-

* Word association tests were devised by Galton and are used by psychoanalysts who ask for a response from the person tested.

ation and stimulus-response theory are in explaining memorisation. But stimulus-response and association theories cannot always satisfactorily explain memorisation. The learner is actively in search for combinations which are *meaningful to him*. Here we see the possibilities of the theories of Gestalt and sign-learning. The learner is active in his search to unite the parts into a whole — the law of good Gestalt is at work here. In order to memorise the following pattern of letters for example:

M D H
A E I
P N T

the learner makes use of 'good' Gestalt of his own. A few learn this pattern by rote; most of the learners use 'spatial relations' or 'logical connections' or 'meaningful association' or by combination of all — thereby getting the best form.

In memorising a meaningful prose or poetry piece, the application of Gestalt principle is greater. In memorising a passage we note its general sense and the place of each part on the general scheme. Some words may have stronger significance than others. The active interest which a passage arouses in the reader gives a better progress and higher standard of memorisation. The theory of self-involvement is applicable here.

The excessive use of mechanical rhythms in a meaningful passage can destroy a real insight into it and its memorisation. This thing happens when passages are sung like rhymes and psalms. The attention of the singers is mainly focussed on the tune, rhyme and rhythm and the meanings of the words are not often understood but they have only a tonal or rhythmic value. Rhyme and rhythm tend to break up the meaning often, since they emphasise meaningless breaks here and there. In this case meaningful memorisation may be hampered but the rhythm and rhyme occupy the mind to such an extent that memorisation becomes easily possible.

Active recitation helps better retention. Alternation of reading, recitation, reading-recitation is recommended. The more the subject will do for himself, the more rapidly the assimilation of the material will be achieved. In an experiment by

Gates the learning of adults and children was compared in five different situations. In the first situation, each subject spent all his time reading and re-reading his assignment. In the second he gave 80% of his time to reading and 20% to forcing himself to recall and recite, from point to point, what came next in the reading. In the third he gave 60% to reading and 40% to reciting; in the fourth 40% and 60% respectively and in the fifth 20% and 80% respectively. With both nonsense and meaningful material the more time given to reciting, the better the performance was. The reason for the superiority of active recall and recitation over mere re-reading is the fact that in reciting, whether to oneself or to another person, one is doing approximately what will have to be done later when the test comes.

A question often discussed is the value of 'whole versus part' recitation. Though the psychological evidence is not unanimous, more is in favour of whole learning. It depends no doubt on the length of the passage.

The sequence of events and ideas in a chapter of history, is better learned by going through the whole thing and getting it as a unit than by learning separate parts and then putting these together, provided that the length of the material to be handled is not so long as to entail actual fatigue. "Part learning makes for maintaining immediate interest. Whole learning makes for correct meaning, since false and incomplete associations are avoided by taking the whole passage at a time".

Superficially it might be desirable to break up the whole pattern and to learn it by 'spaced repetition'. The two cases, however, are quite different. Any given unit of material is better learned by spacing than by continuous repetition, but any given unit of material is also better learned as a whole than by chopping it up. The superiority of whole learning over part-learning varies a good deal with the type of material, and it also varies somewhat from person to person. The superiority of whole learning over part-learning is due to the fact that by the whole method the pattern is better grasped and each part is seen in the light of this whole pattern. By the whole method each word or phrase has some meaning because of its context in relation to the whole plan. The part method, however, makes for maintaining immediate interest.

It is, in fact, better to combine the whole and part methods, giving each one its due, than to press the virtues of either one to the complete exclusion of the other. Recitation and reading should go on alternately.

Our discussion so long has been concerned with recording and retention of material. Now to consider recall or recognition. An efficient learner tries to make each act of recall an act of recognition by enriching the associations when recording the material. The main causes of failure to recall are lapse of time and lack of interest. The rate of forgetting due to lapse of time was first investigated by Ebbinghaus in 1885. Memorising lists of nonsense syllabus and relearning them at various intervals, he was able to calculate the amounts forgotten. He found that after twenty minutes 58 per cent is remembered; after one hour, 44 per cent and after nine hours, 36 per cent; after one day, 34 per cent; and after two days, 28 per cent; after six days, 25 per cent; and after thirty days, 21 per cent. Thus forgetting is most rapid immediately after learning. After a lapse of thirty days, one fifth is still retained.

Attentiveness :

Attention helps recall and recognition. Attention is a condition of learning. Woodworth says, "Attention explores, perception discovers." In attention, the learner is not passive, he is rather active and searching. There is purpose and selection. Purely behaviourist theories are not adequate to account for the attentive process. The active learner is better explained in terms of sign-learning, Gestalt principles and self-involvement. "Fluctuation in attention is caused by sensory and mental fatigue and has its beginning in physiological roots."

The first main fact of attention is the differentiation of the world into a foreground and a back-ground, a world selected and a world rejected—often called 'figure and ground'. What is 'figure' at one moment is merely 'ground' at the next moment.

Laws of association and stimulus-response theory in attention : change of stimulus stimulates attention. A moving object attracts our attention more than a static one.

The effectiveness of the flashing neon advertisement is known to all.

Repetition, on the other hand, leads to increased attention. Suitably spaced repetition is helpful in learning a lesson. The strength of the stimulus also makes for attention. Bright and attractive colours, clear allusions and vivid descriptions are all used in order to arouse attention. Definite forms, concrete illustrations, careful use of diagrams make for good attention in the lesson.

The attention of a learner is aroused by an appeal to his interest. "Being interested is, then, an enduring condition of the subject".

Interest is connative rather than cognitive; the emotions must be organised around the idea of the object of interest. There is an intimate relation between interest and attention. They are like the two sides of the same coin. According to Mc Dougall, interest is the mental structure itself, while 'attention' is used to describe the experience which that structure is always ready to determine. To have an interest in any object is, then, to be ready to pay attention to it. Interest is latent attention and attention is interest in action.

Interests of an individual are determined by the society in which he lives. Social influences tend to standardise what we attend to. In this respect, we must make a distinction between that part of the interest which is personal and is best explained in terms of the active learner, and the part of the interest which is socially determined and is best examined in the light of conditioning.

The teacher is often interested in sustaining attention of the child for a longer period. There are generally three stages in the sustenance of attention. This may be accounted in terms of the learning theories discussed, particularly the theories which make the most of motivation and self-activity on the part of the learner.

In the first place interest, curiosity and wonder stimulate attention. But this interest and attention cannot continue for a long time and restimulation is required for the sustenance of attention.

In school work, where a long series of lessons is necessary in one subject as in Arithmetic, the children should be restimulated in each fresh lesson.

In the second place, the continued interest for studying subjects which require a long time, must be supplemented by more disciplined study. At this stage the incentive may come from outside. This incentive may have to be supplied by the teacher. When the first stage of exploration is over, naturally the child feels little attraction for learning and he is to be motivated by fear, discipline and social prestige, etc.

In the third place, again, the stage of spontaneous attention may appear, when the learner achieves mastery of his material.

The first and the last (the third) stages are spontaneous and involuntary.

The teacher is mostly concerned with the middle or 'willed' stage when he will have to use his devices to sustain attention of the learner by extraneous influences or re-inforcements.

How does learning theory fit in with these phases in sustained attention ?

Thorndike's law of effect and Hull's 'need reduction' have something to do with the initial stimulation of attention.

So far as the second stage of sustenance of attention the teacher has to supply extraneous motives — and here we get the best account from re-inforcement theory. But the child also supplies his own motives, connected with his self-feeling and the standard he sets. The psychology of self-involvement and the concept of level of aspiration are relevent here. Disciplined study brings insight into the subject leading to the third stage where the learner gets joy in mastery and application of the subjects. The Gestalt principle of insight and the concept of self-involvement are implied here.

Distraction in Learning :

Disturbance or distraction is also helpful in learning process.

Perception is selective and this selectiveness of perception depends on attentiveness. We can attend only to one thing at a time, the other things are relegated to the reflex level. We may refer to the relation of ego and non-involvement behaviour. In the simultaneous performance both tasks suffer: here we have a clear instance of the law of span. The mental energy, it is assumed, instead of flowing in one channel, is flowing in two and the supply is distributed. So when one of the tasks is automatic, the performance of the other task with attention does not suffer .

When the effect of distraction is investigated, we obtain a paradoxical result. The subject is required to attend to some task, and efforts are made to distract him. The subject rises to the occasion and gives a better performance than when undisturbed. The explanation is that the subject makes an effort of will which more than compensates for the distracted conditions. Again, the way of doing two things at a time is to attend first to one thing and then to the other or to combine the two into one larger single unit. These are examples of Gestalt principles. The efforts to overcome distraction and rising to the occasion means that we must look closer and more intelligently at the material we are learning. By trying to find new relations, trying new approaches to the subject matter, we will have full self-involvement in it. But at the same time we require to have the habit formation of inattention or inhibition of the distracting elements. We may organise in this way the distraction into attentive wholes thereby making distractions helpful to attention.

Distraction means "a stimulus that attracts attention away from the thing to which we mean to attend". But the nature of distraction differs from person to person. What may appear to be a distraction for one individual may not be a distraction for the other. Distraction again is not always harmful. Sometimes it encourages an individual to make greater effort in order to confine his attention to the work he is doing. So the training in attention is incomplete without the ability to concentrate even in the presence of some distraction.

The best method of avoiding inattention is to overcome the distraction by either side tracking it or by making it complementary with the main task. In other words, attention is sustained when it is related to the desire or interest of the individual. The teacher has to develop in his students a genuine interest in the subject he is teaching. The success of a teacher depends upon his ability to develop in his students a genuine interest in a subject, to arouse their curiosity and provide for incentives which are mostly psychological.

Dr. Fleming[7] observes: "Learning is co-extensive with living. It is not merely a characteristic of the activities of childhood and youth. Acquisition of new forms of skill, memorising of new fields of knowledge and acceptance of new sets of values are processes which continue into adult life and old age. It is never too late to learn; but learning is possible only if the would-be-learner believes he can learn, wishes to learn and is prepared to take the necessary steps towards understanding, practising and perfecting the content of the modification (in his knowledge, his activity or his outlook) which he wishes to achieve — in order the better to satisfy his own fundamental needs of acceptance by the group, he belongs."

READING LIST:

Woodsworth, R. S., *Psychology*
Peel, E. A., *Psychological Basis of Education*
Newcomb, T., *Social Psychology*
Sherif, M & Cantril, H., *Psychology of Ego-Involvement*
Dongale, M.C., *An Outline of Psychology*

Questions:

1. What is sensation? What are the characteristics of sensation?
2. What is the meaning and value of sense-training? How far is sense-training helpful in education?
3. Give a short account of Gestalt theory of perception. Dis-

---

[7] Fleming, C. M., "Processes involved in learning", *The Social Psychology of Education*, p. 35.

tinguish between Figure and Ground in perception.
4. What is the nature of Imagination? What part does it play in education?
5. Distinguish between Reproductive and Creative Imagination.
6. What are the marks of good memory? Can memory be improved by practice? Discuss.

CHAPTER — IV

Psychology of Learning

Learning and Maturity :

Modifications of responses begin almost in the very first day after birth. Learning takes place through these modifications and learning involves acquisition of new behaviour. We are continually learning new things, acquiring new information and forming beliefs and attitudes. The individual thus has to learn new ways of doing things as well as new ways of thinking and feeling in order to adjust within his environment.

It is no doubt very difficult to define learning. Changes in the environment result in changes in the person. The normal child comes in contact with the physical objects around him and he begins to explore. One day he touches a hot milk-pot and he changes his behaviour next time and avoids touching the hot milk-pot. Again, changes in the social influences constitute changes in the attitudes of the child. When, for example, the child's playmates admire or blame him, we find changes in the child. Here is learning. Environment is no doubt made up of interpersonal relationship. Changes in the attitude and behaviour of teacher or parent bring changes in the behaviour of the child. Book learning is also an example of an indirect interpersonal relationship. The author makes an impact on the mind of the reader, through the pages of his books. Learning is thus a change in the individual by the impact of the environment on the individual.

Learning depends also on innate intelligence and other capacities of the learner. Learning is not possible without the basic minimum ability needed to learn a task. When the nature of the task becomes complex, the requirement of higher abilities is increased. Learning is related to maturation. Unless and until there is the needed maturation, satisfactory learning is not possible. Learning and maturation go together.

It is found that physical and intellectual maturing varies with glandular functioning and individual differences may range from 'infantilism' or idiocy to what may be described as marked superiority or genius. Emotional and social maturity are not dissociated from these; and in these also the differences between the individuals are very great. "Immaturity may be thought of as a perpetuation into adult life of modes of behaviour characteristic of infancy, childhood or adolescence, but imperfectly suited to the claims made by society upon the fully-grown human being." Emotional maturity results in changes both in the circumstances stimulating emotion and in the character of the individual's response.

The environmental aspect of learning includes opportunities as well as facilities to learn. It is not uncommon to find an extremely poor child who is very intelligent remain illiterate as educational opportunities were not available to him.

Learning presupposes some sort of maturation in the learner and at the same time learning leads to maturation (development).

Maturation is the basis of motivation in learning.

Learning is an active process and it is purposeful; and it is not true that the learner is passively conditioned by the environment. Motivation is the spring. Mc Goech[1] defines motivation as "any condition of individual which points or orients him towards the practice of a given task and which defines the adequacy of activities and the completion of the task." Again, this motivation of the learner is determined by maturity in him. The learner does not depend upon trial and error, learning is directed towards certain goals and, therefore, it is purposive. The purposive goal-directed behaviour is selective and the learner uses the environmental factors as much as possible for the realisation of his goal. It must be remembered, however, that the selection of the environmental factors and the selection of the goals depends upon maturity and also on the individual differences. Maturation leads to self-involvement in learning and this has been discussed later. This motivated self-involved learning is different from Tolman's sign learning where rewards and punishment regulate the goal-seeking behaviour. The main contribution of Tolman's sign learning theory (to be discussed later) has been to raise behaviourism from its lifeless, purposeless, mechanistic level to the level of meaningful and purposive activity.

---

[1] Mc Goech, J. A., *The Psychology of Human Learning*, p. 27.

Learning is adaptive and it leads to a socially acceptable person. Theories of learning at the initial stage attempt to explain "how successful responses are selected and unnecessary and erroneous respones are eliminated".

Different Theories of Learning :

A. THEORY OF ASSOCIATION : The older psychologists said a great deal about remembering what had been previously learned and they had not begun to experiment on the process of learning. The principle of association of ideas has existed since the time when humanity was first able to record its thoughts. Aristotle tried to explain memory in terms of the association of ideas. Aristotle in his essay on 'Memory' made the fundamental observation that one thing reminds of another, and went on to ask this question in effect : "If A reminds you of B, what is the relation of A and B?" His answer was, that the relation was sometimes one of similarity, sometimes one of contrast, and sometimes of contiguity. David Hume in his "Inquiry concerning human understanding" formulated the problem of the association psychology very clearly when he asked whether it was not possible to go behind the 'faculties' and discover "the secret springs and principles by which the mind is actuated in its operation". He concluded that such a principle was found in association, a force of attraction between ideas. The pleasure-pain principle was added later. The more pleasurably associated experiences and responses are strengthened in the memory. The principle of association can be stated in the following terms :

"When two experiences have occurred together the occurrence of one will tend to revive the other"*

Sometimes, however, when past experiences suddenly come to mind it becomes difficult to trace the association. Certain conditions also make association stronger. The conditions are frequency, recency and intensity with which the experiences have occurred.

We cannot deny the facts of association but association fails to account for many of the dyamics of animal and child-learning. One such element concerns the place of motivation. The child can be taught to learn words if he wants to learn. Association is a passive string, it fails to motivate.

STIMUIAS RESPONSE THECRY : Thorndike (1874-1949) : His theory of learning is known as connectionism. In his book,[2] he wants to show that there was a bond between sense-impressions and impulses to act. A particular stimulus becomes connected with its response and S-R bond is formed. This theory is referred to as connectionism. S-R bonds may be motor, idtational, percepual or emotional. Learning is a process by which bonds are built, strengthend and organised into systems. Before 1930, he was very much concerned with learning by trial and error. He performed a number of experiments on animals to prove that learning was a matter of trial and error. He made a special type of box which was known as problem box. A hungry can was put inside the closed problem box with a provisiion to come out of the box after some trials. The ctt was hungry and so the food was kept outside the box to motivate the cat to escape with trial and error. It was found that after a number of trials the cat could learn gradually to open the box and to come out with less effort than before.

Thorndike recognised the fact that if the cat were not hungry and there was no food outside the box, there would have been very little effort on the part of the cat to come out. He framed his 'law of effort' accordingly. He stated: "When the law of effect is omitted — when habit formation is reduced to the supposed effect of mere repetition — two results are almost certain. By the resulting theory, little in human behaviour can be explained by the law of habit; and by the resulting practice, unproductive or extremely wasteful forms of drill are encouraged". He made it clear that any effort without reward as satisfaction will not be effective. In the course of trials, the non-successful impulses will be stamped out and the particular impulse leading to the successful act will be stamped in by the resulting pleasure, until, after many trials, the cat will, when put in the box immediately claw the button or loop in a definite way.

---

* Neutrological and physiological explanations of association have been avoided.

[2] Thorndihe, *Animal Intelligence*, 1898.

As a result of the experiment, Thorndike put forward three laws, the laws of frequency, recency and effort. These are similar to some of the earlier laws put forward by the association psychologists.

By law of frequency, the most frequently performed actions are being repeated. The law of recency implies that the movements recently performed tend to be repeated. But according to the law of recency alone, the animal would never get away from his first unsuccessful response. By the law of effect those responses which lead to success or reward tend to be 'stamped in the animal's behaviour. But this law of effect announced by Thorndike, encountered much criticism. The law of effect is a law of association and nothing more. It lays down a certain factor in the strengthening and weakening of association. The objection was raised that the law assumed blind trial and error in hitting on the successful response. Thorndike seemed to have made this assumption, but it has nothing to do with the law of effect, which does not attempt to say how the response is initiated but only that, when initiated and performed, it has results which strengthen or weaken the tendency to make the same response in the future. It involves the logical fallacy of *'Post hoc ergo proper hoc'* The behaviourists took fright at the words pleasure, discomfort, satisfaction and annoyance used by Thorndike to indicate the effects of an act and questioned his assumption of such conscious states in animals or that even in man they could have any effect on the brain to strengthen the nerve connections involved in making a certain response to a situation. Thorndike offered possible normal explanations, admitting that they were speculative. It is not necessary. Again we cannot speculate on the animal's conscious states.

Some years after the original animal experiments which led to the law of effect, Thorndike made extensive experiments on human learning. He revised his law of effect by assigning much greater weight to reward than to punishment.

The law of effect gives place to motives in the learning process. Something like this also appears in Hull's theory under the name of "Need Reduction". The concept of *effect* can be applied to other than merely motor responses. Young children often learn in this way. In learning to open a door by turning its handle, a child behaves just like Thorndike's cats — first random shaking, pulling and pushing, until the handle is turned correctly. Once this has been achieved, the child is observed to do it repeatedly for satisfaction and joy. The reward response is being 'stamped in'. Much of children's learning depends on "approval" by the parent. The parents' and teachers' responsibility is to determine which of the child's responses are to be rewarded and which punished. 'S-R' connections are weakened and may lead to forgetting when the responses are unrewarded or punished.

Experiments have been carried out on animals which show that unrewarded responses are stamped out. The implications of the law of forgetting are clear. If behaviour response is found to be undesirable it should be consistently ignored and would not lead to any reward. "This process of forgetting may be accelerated by not merely failing to reward a response but by positively punishing it". Consistency of reward and punishment is supposed to be the basis of this sort of training, for at this level of learning the 'insight' of the learner and the 'meaning' of the process have very little influence on the behaviour of the learner. We should, however, avoid the very similar stimuli leading to rewarded and unrewarded responses. The individual finds it difficult to make the correct choice. He finds himself in a state of indecision and naturally frustration takes place, which may lead to regression and neurosis. This problem is relevant to the classroom learning-teaching situation. There should always be a consistency of reward and the child should not be placed in such a situation when he cannot distinguish between rewarded and unrewarded actions.

Thorndike's law of effect has been considered in the preceding paragraphs. He says "both theory and practice need emphatic and frequent reminders that man's learning is fundamentally the action of the laws of readiness, exercise and effect" He further observes that the individual was "first of all an associative mechanism working to avoid what disturbs the life processes of the neurons. If we begin by fabricating imaginary powers and faculties, or if we avoid thought by loose and empty terms, or if we stay lost in wonder at the extra-ordinary versatility and inventiveness of the higher forms of learning, we shall never understand man's progress or control his education"[3]. He made it clear that learning was subject to the laws of readiness, exercise and effect and these can be very useful in the process of education.

The law of readiness indicates the learner's state to participate in the learning process. In order to establish the connection between the stimulus and response, the learner must be physically and mentally ready or prepared. S R bond cannot be satisfactorily established unless a "conduction unit is ready to conduct." Thorndike's readiness is to some extent related to the concept of maturation.

The law of exercise emphasises practice in learning. Without practice or repetition learning will not be lasting.

These three laws of learning propounded by Thorndike before 1930 became popular but were also critically examined by some psychologists. Thorndike discovered five sub-ordinate laws.

The first sub-ordinate law is the law of multiple response to the same external stimulus. When the right response is made, the learner experiences satisfaction. The law of multiple response enables the learner to vary his responses in a manner that he is able to achieve success.

---

[3] Thorndike, E. L., *The Psychology of Learning.*

The second sub-ordinate law is that in learning, the attitude of the learner is an important factor. If the task to be performed is to the liking of the learner and is suited to the situation yelding satisfaction, he performs it well.

The third sub-ordinate law is that a learner selects only such items which are directly related to his learning effort. He reacts to a learning situation in a selective manner. Here, it appears as though the learner uses his 'insight'.

The fourth sub-ordinate law is based on a learner's ability to respond on the basis of previous experience. He makes responses by analogy. There is no response by a learner which is entirely unconnected with his previous responses.

The fifth sub-ordinate law is that of associative shifting. The most important feature of this law, according to Thorndike, is that we may "get any response of which a learner is capable, associated with any situation to which he is 'sensitive'." The elements of association and similarlity enable a learner to make associative shifting.

Thorndike was famous for his "theory of effect." Thorndike's connectionism which started with animal learning gradually became a powerful theory of human learning. It changed the prevalent idea about reward and punishment. It clearly stated that reward was more desirable in teaching and that it helped in strengthening bonds more effectively.

C. Theory of Conditioned Responses: The Russian physiologist Pavlov gave the concept of conditioned response in connection with physiological and reflex responses of animals. A hungry dog is presented with food. He salivates. At the same time as or just before the food is presented to him, a light is flashed on. The experiment is repeated several times. Finally the light is flashed on but no food is given to the dog. He salivates. He has become conditioned to respond by salivating to the stimulus of the flashing light. We might represent what goes on in terms of S-R symbols. While food in the mouth is a natural stimulus for the reflex flow of saliva, the flashing of light, the sight of a dish or the sound of footsteps cannot be natural stimulus for this reflex.

This salivary response to a signal, Pavlov at first called a 'psychic secretion' but as he wished to stick to physiology and not get drawn off into assumptions regarding the dog's mental life, he coined the term 'conditioned reflex' (C.R.). The signal he called the conditioned stimulus (C.S). The conditioned reflex was obviously a learned response. Pavlov found the way to build up a conditioned salivary response to any stimulus that would attract the dog's attention without arousing fright or anger. A hungry dog was placed in the familiar apparatus and left quiet for a while. Then a metronome began to tick; the dog pricked up his ears : when the metronome had ticked for thirty seconds, meat powder was introduced into the dog's mouth producing the normal reflex flow of saliva. This exact procedure was repeated and after a number of such repetitions saliva began to flow during the thirty second interval before the meat powder was introduced. The advance flow was the conditioned response and the metronome was the conditioned stimulus; the meat powder was the unconditioned stimulus, also called the reinforcement because it produced a much greater flow of saliva than the metronome did even after conditioning. The following diagrams given the picture of what happens in conditioned reaction:

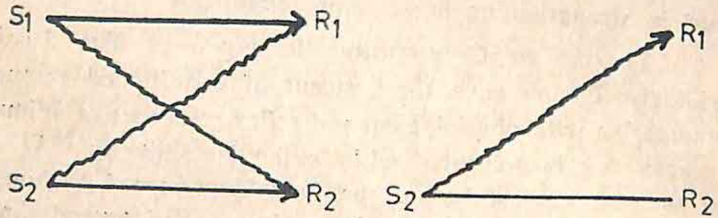


Fig. 4

The food powder stimulus S_1 produces the salivary response R_1, the sound of the metronome S_2 produces the response of hearing R_2. After many repetitions of these sequences togther, the metronome stimulus arouses not only hearing of the bell, but also salivation. The dog does not, however, begin to salivate as the metronome begins to ring but thirty seconds afterward. This is known as delayed reaction. In general if the substitute stimulus precedes the adequate stimulus in the training series by a certain interval of time, then when the substitute stimulus is given, the reaction follows after the same interval. It has been noted that in the delayed reaction, the substitute stimulus continues operative throughout the delay interval. Other experiments were performed in which the metronome was sounded once, and the delay interval was one of silence. In this case conditioning occurred, but the response was so weak that Pavlov gave to it the name 'trace reaction'. The trace reaction differs from the delayed reaction only in lack of continuous presence of the conditioned stiumulus and in the less intense response resulting.

There are many indications that the latent period of the delayed reaction is not merely passive, but involves an active restraining of response on the part of the animal. This active restraint is called inhibition. The most striking evidence of the active nature of inhibition is that any extraneous stimulus will release it and response will be made at once. If during the inhibition period a loud noise, itself not a conditioned stimulus, is made, the inhibition is lifted and the dog salivates at once.

In conditioned reactons, differentiation can also be marked. If the metronome A is repeated sounding again and again accompanied by the adequate stimulus and metronome B is repeated without the adequate stimulus ever being given, the response to A will be strengthened and that to B will be weakened. Eventually the dog will react to A but never to B. Pitch descrimination is also possible.

A number of objections have been raised to Pavlov's description of the conditioned reflex or reaction.

The most common criticism is that the two stimuli—the meat-powder and the sound of the metronome—have been associated together. It is better to term it as association reflex, a term which was proposed and used by Bechtiev. It is nothing but the re-discovery of association by contiguity. Another objection is that Pavlov's technique ignores one of the two responses concerned, the original response to the sound of the metronome.

The conditioned reaction, however, largely influences human learning. In conditioned reactions, the conscious process of learning does not come in, it is rather an adjustment to stimulus without any deliberation . The most definite evidence of the absence of voluntary control or conscious process in conditioned reaction is found in Hulsery Cason's work on the conditioning of the pupillary reflex. An increase in the light falling on the retina causes a contraction of the pupil; a decrease causes dilatation. This is a reflex almost totally independent of voluntary control.

Although Pavlov's research concerned a limited physio-psychological problem, the concept of the conditioned response is also applicable to the kind of learning within the class room and home. This concept may be stated as follows: "Any of the contents of a child's experience which are present as he acts or behaves in a certain way will tend to become linked up with the activity, so that if the experiences recur they will tend to evoke the connected actions or behaviour."

"In the class room the child fails to do some arithmetic correctly, is scolded by the teacher and derided by the class. This experience is repeated and finally the experience of arithmetic in any situation and in extreme cases even the thought of class-mates, may lead to the original response of fear or anger and the consequent avoidance and negative attitude to school work. Similarly adults may develop irrational fears and phobias, loss of confidence in social situations, because on one occasion they may have felt themselves awkward." (E. A. Peel).

The explanation of forgetting can be given simply in the following way. In the case of Pavlov's dog if the conditoned stimulus is repeated without the adequate stimulus, the response will be weakened and eventually the dog will forget to respond to the conditioned stimulus. With the human child, it takes time and patience to uncondition a well established conditioned response or bring about a change in attitude to a school subject. It is not merely the problem of failing to respond when a situation is present. The real problem is to make that failure come about quickly and here we need to take account of the emotional tone of the 'key' stimulus-response bond. Our problem is to shift this emotional tone to diminish it, so that it is no longer leading to the greatest relief of tension or to introduce another bond of greater emotinnal tone.

A $2\frac{1}{2}$ year-old girl developed a fear of sleeping in a certain room because the branches of a banyan tree used to tap and scrape the window with the slightest wind and the child failing to find out the reason, developed a phobia.

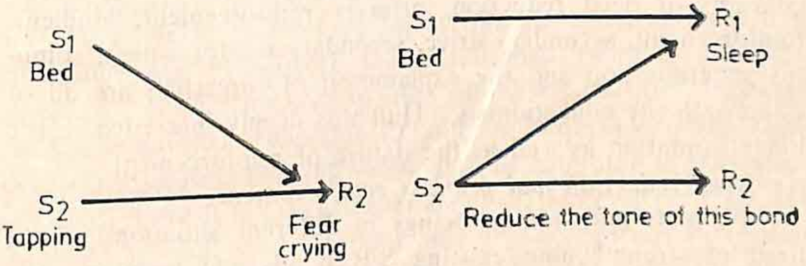


Fig. 5

'Explaining' the tapping, cutting off branches, reduced the tone of S_2-R_2, leading to restitution of S_1-R_1 and the conditioned connection S_2-R_1. But explaining away the phobia is often not enough. We may have to introduce a new bond S_3-R_3 more impressive than S_2-R_2 and leading to R_3 which is not antagonistic to sleep. By sitting by the side of the little girl or by 'bribing' the girl with a sweet (S_3) we should be able to introduce a 'new learning' to replace the old.

Thus connectionism emphasises the influence of 'effect' in the formation and strengthening of S-R bonds. Successful responses are 'stamped in'; unsuccessful ones and to be eliminated. Conditioned response theory accounts for the formation of new

S-R bonds in terms of the proximity of stimuli and responses.

According to Hilgaral, the following suggestions of Girthrin may be considered: "(1) If you wish to encourage a particular kind of behaviour or discourage another, discover the cues leading to the behaviour in question. This is all that is involved in the skillful use of reward and punishment. (2) Use as many stimulus supports for desired behaviour as possible, because any ordinary behaviour is a complex of movements to a complex of stimuli. The more stimuli there are associated with the desired behaviour, the less likely that distracting behaviour will upset the desirable behaviour"

D. MODERN THEORIES OF LEARNING : A. Theory of Reinforcement : Hull's theory of learning originated from Thorndike's law of effect and Pavlov's concept of conditioning. He combines these earlier principles under the concept of reinforcement. The concepts of need reduction, primary reinforcement, gradient, reinforcement, secondary drive, secondary reinforcement, stimulus generalisation and the explanation of forgetting are all of interest to the educationists. Hull was deeply interested in the habit formation as well as the nature of reinforcement.

(i) Need reduction and primary reinforcement :

Animals and human beings in different situations are in need of strengthening existing S-R, bonds and forming quite new S-R connections. The first takes place by the process of learning by 'effect' and the second comes about by conditioning. A conditioned response is possible only when the animal or child is in a state of need. Also by the law of effect, a need or motive is satisfied. According to Hull the 'reduction of a need' reinforces S-R connections. His law of primary reinforcement may be stated as follows : "Whenever a response R follows quickly upon a stimulus S and this conjunction of S and R is closely associated in time with the diminution of a need, there will be an increased tendency for that S-R to recur on later occasions." This principle of Hull is illustrated by referring to the following experiments :

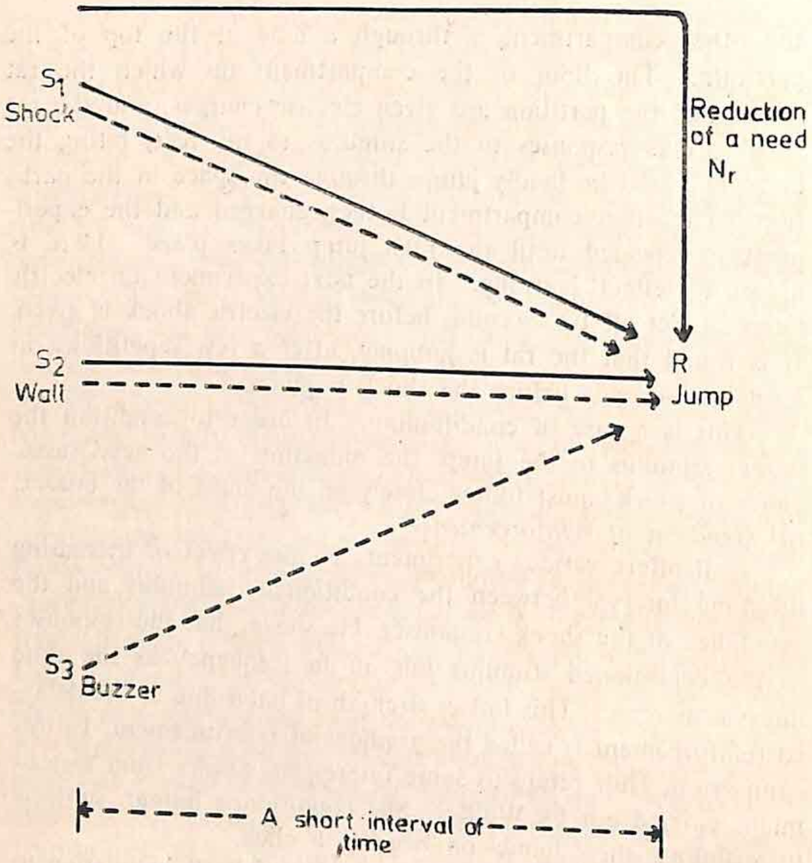
A rat is in one compartment of a double cage. Access to the other compartment is through a hole at the top of the partition. The floor of the compartment on which the rat stands and the partition are given electric charges, and the rat tries various responses to the stimulus to his feet, biting the bars etc., until he finally jumps through the space in the partition. The other compartment is then charged and the experiment is repeated until the rat's jump takes place. Here is a case of 'effect' learning. In the next experiment an electric buzzer is set off two seconds before the electric shock is given. It is found that the rat is jumping, after a few repetitions, at least two seconds before the shock is given.

This is a case of conditioning. In order to condition the buzzer stimulus to the jump, the reduction of the need (avoidance of shock) must follow closely on the onest of the buzzer.

(ii) Gradient of reinforcement

Hull offers various experiments on the effect of increasing the time interval between the conditioned stimulus and the avoidance of the shock (response). He shows that the responses to the conditioned stimulus fall off in frequency as the time interval increases. This fall in strength of habit due to the delayed reinforcement is called the gradient of reinforcement. In this connection, Hull refers to some interesting results from experiments carried out by Wolffe. She conditioned human subjects to withdraw their hands on hearing a click.

This concept of reinforcement and its fall off in relation to delay is very important in the matter of training of children. When young (3-5 years), children demand immediate 'need reduction'. A task is given to a child and he smartly brings up his exercise book, completing his task for marking and anticipating the immediate praise (need reduction). Punishment, similarly, in these earlier years, becomes most effective when it is given immediately following the act or behaviour desired to be corrected. Teachers should not, therefore, delay recognition and fail to give immediate credit or punishment when it is due. Even college students do not like to cover too much ground in lectures without some check or examination, leading to need



The dotted lines represent S-R Bond increments or New Bonds

Fig. 6

reduction to reinforce the learning.

Secondary Drive : Hull and in particular Mowrer, in order to explain human motivation, have used the notion of what they call secondary drive. Secondary drives are learned. The complex pattern of emotions and motives is built up of such secondary drives. Secondary drives like recognition, status and affection, motivate human learning.

SECONDARY REINFORCEMENT : In order to explain the time lag between reinforced response and the reinforcing need reduction Hull has propounded the principle of secondary reinforcement. This principle is stated by Peel in these words : "Briefly according to this theory, the S-R connection which has been reinforced by the primary need reduction acquires itself the power to reinforce any other contiguous or immediately antecedent S-R connection, and this S-R connection in turn may reinforce any other contiguous or immediately antecedent S-R response."

The nature of secondary reinforcement is revealed in an experiment of Pavlov. In this experiment, a hungry dog was allowed to listen to a ticking metronome and then after 30 seconds he was given food. This practice was continued till the dog started salivating without food. The ticking metronome stimulus became conditioned to the salivating response and thus the stimulus in the form of ticking and response in the shape of salivating established the S-R connection, which was being enforced by need reduction pertaining to food. This is the primary reinforcement.

The following procedure was followed in order to introduce the secondary reinforcement.

A black square was put before the dog's eyes for ten seconds and then it was removed. After 15 seconds the metronome started ticking for 30 seconds but no food was given. Even then due to primary reinforcement salivating response occurred. After some time the placing of the black square before the dog's eyes alone produced salivating response. The salivating response resulting from the presentation of the black square was entirely due to its asociation with the ticking metronome stimulus. Thus it is concluded that "the metronome had not only acquired the capacity to evoke the flow of saliva but had also acquired the capacity to act as reinforcing agent."[5]

STIMULUS GENERALISATION : It has been assumed in the experimental examples of Pavlov and Hull that the stimulus S in the reinrorced S-R connection is simple and constant. In the case of the loudness of the buzzer, a zone of stimuli S centred on the particular intensity, is capable of bringing about the response R. Sounds on the edge of the zone, too soft or too loud, are less effective than those near the centre. In spelling, most errors take place because the learner responds to zone of stimuli, including the correct spelling. For example, we have strenght for strength (ght and gth make up the zone), develope for develop (elope, envelope, develop) etc.

---

[5] Hull, *Principles of Behaviour*, quoted by Peel.

In word recognition test by the multiple choice method, stimulus generalisation is used.

In order to explain how we may get stimulus generalisation, Hull assumes that there is a secondary stimulus generalisation. This is undoubtedly a learned process. A dog when it is trained to salivate to a light, may be taught to salivate to a sound also. In multiple-choice tests of intelligence, secondary stimulus generalisation is used. Much of the complex nature of human learning is explained by the principle of primary and secondary stimulus generalisation. The principles also account for transfer of training from one field of study to another. The principles also help us to understand the difference between common sense and logical notions of similarity and difference.

"The common sense notion of similarity and difference is based upon the presence or absence of primary generalisation gradients, whereas the so-called logical or abstract similarities and differences arise from secondary, learned or mediated similarities and differences, particularly those mediated by verbal reactions."[6]

FORGETTING : Hull discusses two aspects to the phenomenon of forgetting. The first is experimental extinction. The law of reinforcement mediates connections between the responses and all stimuli whether they are causally related or not to the need reduction. Failure to reward unadaptive S-R connection makes it extinguished. It is necessary to reinforce connections from time to time if learned habits and processes are to be maintained. It is found that in the long run those S-R bonds which are causally related to the need reduction will survive. But in case of human learning the causalty or non-causalty of a stimulus is a matter for the person to decide.

---

[6] Hull, C. L. *Principles of Behaviour*. p. 194.

The second aspect of forgetting is intimately connected with physiological fatigue. The by-products of muscular activity tend to reduce further activity until they are dissipated. Mental fatigue also gives rise to forgetting. This is called by Hull as the reactive inhibition.

Thus we have two aspects of forgetting — the extinction of useless and unadapative S-R connections by the failure to reward them and the inhibition which is produced as a trace following upon any activity. "Stimulus extinction is molar and reactive inhibition is sub-molar and physiological."

Hull makes full use of Pavlov's principles of reinforcement and extinction. He means also to make full use of Pavlov's law for the establishment of a conditioned response, but it must be said that he does not follow Pavlov very closely. He accepts the substitute-stimulus theory of this conditioned response. He holds that any stimulus occurring 'in close temporal contiguity' with a reinforced response becomes connected with that response in order to evoke it later. This statement of Hull implies that the conditioned response is the same as the unconditioned response only attached by conditioning to a new stimulus; whereas the conditioned response usually differs to some extent from the unconditioned and has the characteristics of a preparatory response.

SIGN LEARNING : In Hull's theory, trial and error methods of learning play an important part. A theory which depends so much on random methods of selection of actions can have limited value in human learning. Much of human learning is purposeful in attacking problems. Tolman's[7] theory of sign-learning starts from these points. Experimenting on the learning behaviour of rats, he concludes that the rat's responses are rarely random and that the animal approaches the problem in an active organising manner. Munn[8] observes that rewards, punishments and conditionings are regarded as signs telling the rat to go this way rather than that, but not agents which 'stamp in' or 'inhibit' the acts associated with them. According to Tolman the learner is following signs to a goal and is learning, not by random movements, but by meaningful movements. The stimuli do not simply act upon the organism; it is oriented to use them. By different experiments Tolman shows that goals serve to give meaning to the various objects in the environment; sheer pleasantness or unpleasantness has no consistent and predictable end result. Conditioning is not simply the establishment of a new stimulus-response connection; it is the building up of a sign-Gestalt expectation. Tolman holds that living organisms set up expectations and that they are capable of inventive learning. He is as Murphy[9] observes "a molar not a molecular behaviourist ; he seeks objectivity in the study of purposive wholes, not of physiological units."

---

[7] Tolman, E. C., *Purposive Behaviour in Animals and Man.*

The essential difference between Tolman and Hull is that which distinguishes the use of a map from a set running habit. Motivation in learning promotes in the learner an 'expectancy' of reward, but it controls performance, and not the learning of the map. When the reinforcement is repeated, the learner's 'reward expectancy' is increased and his performance is improved, but learning is not wholly determined by this reward expectancy. In other words, motivation is at the root of learning and expectancy of reward controls only the learning performance and does not determine wholly the learning itself.

In this connection, it may be said that Tolman's view is much more adequate in explaining learning in children. The child explores for himself apart from the reinforcement provided by the teacher. The unsatisfactory progress made by many retarded children in school illustrates the difference between learning and performance.

[8] Munn, *Psychology of the rat*, p. 372.

[9] Murphy, G., *Historical Introduction to Modern Psychology*, p. 282.

It is agreed by expert remedial teachers that in unpropitious circumstances learning may go on but performance is retarded for emotional reasons. The new incentives should be provided to remove the emotional blockage. Tolman's theory makes a bridge between the mechanism of early learning and the complex learning of the class.

We have by now discussed the four concepts of learning — conditioning, effect, reinforcement and sign-learning. The third (reinforcement) combines the first two and lays more importance on the process of need reduction. The last considers the importance of need-reduction but allows for a more active learner. At the earliest stage of learning, the teacher provides the conditioning stimulus. At a later stage when the child acquires sufficient experience, the law of effect becomes more important. Much of the learning by low-grade intellects consists of conditioned and effect learning. Self-activity demands a higher grade of intellectual power. The most important contribution of Hull is his clear insight into the part played by the reduction of needs. The normal child reaches a stage of learning that is better explained by Tolman's theory. The child learns the meanings and is capable of relating the different parts and movements in a skill. He is motivated by need reduction and this is stimulating his insight into the problem rather than reinforcing a set habit. Tolman's emphasis is on problem-solving by motivation and insight and not on reinforcement of set habit. Hull, on the other hand, insists on need reduction on trial and error methods. The theory of reinforcement of Hull incorporates both effect learning and conditioning and emphasises the role of need reduction. The weakness of this lies in restriction of learning to trial and error methods. Hull's primary and secondary drives imply a negative rather than a positive motivation. Do children attend school and learn only because they have to? Perhaps not. There must be some positive motivation. Tolman, however, in his theory of sign learning gives credit to insightful learning of signs and meanings, distinguishes between learning and performance and relegates the role of need reduction to that of a stimulant activating the learner to a greater activity in the problem situation.

LEARNING BY INSIGHT : Theories of learning already discussed emerge from the 'behaviouristic' school of psychology. It is found that human learning also takes place at this level but here the human cannot exercise his critical powers.

There are serious drawbacks in the behaviouristic explanations of learning. Firstly, they fail to explain the complex attainments that humans are capable of achieving. For example, knowledge of mathematics, knowledge of Shakespeare and an appreciation of fine arts etc. cannot be explained by the behaviouristic school of psychology. Secondly, the laws of effect conditioning and reinforcement all assume that the learner's responses are all blind and lacking in intention.

Thirdly, conditioning implies that the learner is somewhat a passive creature, the slave, to his needs, an automaton responding automatically to the press of the button. Fourthly, human learning is not limited to a particular conditioning. Human beings are capable of applying and transferring their learning to other fields. Learning becomes generalised.

We may, therefore, leave the problem of animal learning to the behaviourists. There is, however, evidence that some animal learning resembles human learning. Learning by insight is this type of learning which should be studied now. We owe this concept of 'insight' to the Gestalt psychologists, Wertheimer, Koffka and Kohler.

GESTALT PSYCHOLOGY : Gestalt psychology is concerned primarily with 'perception'. It started as a reaction against the mental atomism of nineteenth century. The Gestalt psychologists became discontented with the dominant psychology represented by Wundt, the 'brick-and-mortar' psychology, as they called it, the bricks being the sensory elements and the mortar mere association by contiguity. "A collection of elements deprived of meaning and plastered together by meaningless associations seemed to them a travesty of the meaningful experience of human beings." They proposed that the experience of a phenomenon as a whole should be taken as the prime fact. Katz writes, "the Gestalt psychologists base their science of experience on the philosophy of phenomenology". A Gestalt or form is a "whole whose characteristics are determined, not by characteristics of its individual elements, but by the internal nature of the whole". Wertheimer holds that the characteristics of any Gestalt are determined not only by its parts but also by their internal arrangement. We shall need to understand the structure. The Gestaltist insists that the attributes or aspects of the component parts, in so far as they can be defined, are defined by their relations to the system as a whole in which they are functioning. The quality of each component is itself determined by the whole of which it is a part. Let us now inquire whether there is any evidence for these assertions in the facts of perception.

First, the fact of optical illusion illustrates this. In figure 7 the lines KL and MN are straight and parallel. The optical illusion illustrates how strongly our perceptions of parts is influenced by the wholes containing them.

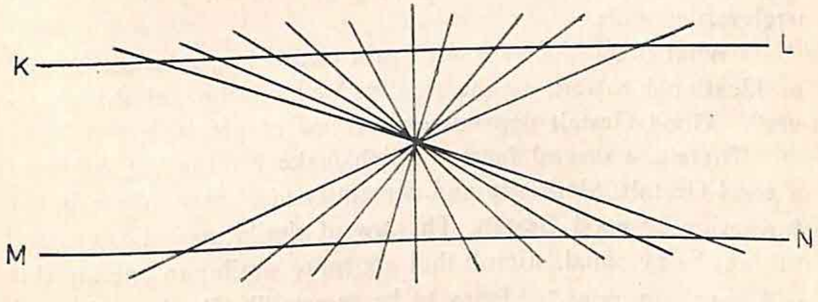


Figure 7

Secondly, if we take away part of a whole or add to it, we perceive a change in quality of the whole.

In figure 8, in each case two lines have been added. There is a change in the inner quality of the figures: A is a star of lines; B contains a plane figure; C holds a suggestion of their dimensions; D has the appearance of a folded paper. The Gestalt psychologists described this sort of phenomenon under the law

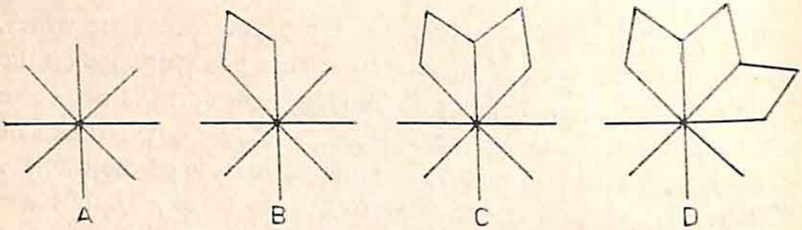


Figure 8

of intimacy (Innigkeit) and it demonstrates that a perceptual whole is more than a sum of its parts.

How are the Gestalts formed?

Koffka says that configurations tend to become as clear as the conditions allow. The figure-clarity against the ground is more important. A "good" form implies units, harmony, inclusiveness and conciseness. This tendency of omitting irrelevant features is shown in many perceputual and cognitive situations. In painting a lanscape, it is a good plan not to paint direct but to paint the scene later from memory. Forgetting removes the irrelevant details.

"What determines the dominant pattern may be the spatial or ideational pattern or the motives and interests of the observer". Good Gestalt depends on the law of precision.

There are several factors which make for the formation of a good Gestalt. Similarity and proximity of elements help in the formation of good Gestalt. The law of similarity indicates, that "things being equal, stimuli that are more similar to one another will have a greater tendency to be grouped". The law of proximity occurs when certain stimuli are in closer proximity than others.

Closed figures are more readily perçeived than open figures. This is a principle of artistic composition, and design. It is the business of the artists to suggest closed forms.

The teacher should present his problem in such a way as to leave some closure on the part of the pupil. A lesson should not however, be over-closed. Something should be left to the activity

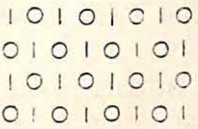


Figure 9

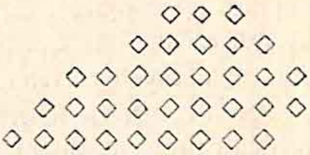


Figure 10

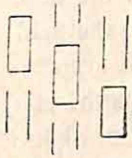


Figure 11

of the pupil. The pupils should be allowed to construct. Components of a figure having 'good' form tend to form a unit. In the arts of sculputure, painting and architecture the artist's designs and compositions are influenced by this closed form.

The experience of the observer has the effect of 'normalising' a configuration, that is, of giving it a meaning. Experience helps in a perception.

In discussing learning in terms of Gestalt theory, we use the word 'insight' instead of Gestalt and talk of 'structuring' or 're-structuring' the insight instead of organising it. In the beginning of learning, insight may be hazy and unstructured, but in course of experience by repetition, analogy, analysis and practice, the insight becomes clearly structured, the parts become related to each other and to the whole.

INSIGHT : Kohler found that the behaviour of apes resembled human behaviour in learning. The animal could from the start, survey the whole situation; he could solve the problem without blind trial and error. A very simple example of a detour problem with insightful solution is given by Kohler. A dog was brought into a strange yard containing a length of fence, and when the dog was near the middle of the fence some food was placed before him on the far side of the fence. Instead of trying impulsively to squeeze through, the dog almost immediately made a dash around one end of the fence to the food. The dog saw the way to the goal even though it was a detour.

Kohler[10] has shown that apes when confronted with a difficult problem, might act as if they were surveying the situation and would go directly to the goal object (banana) by putting two sticks together. It appeared that there had been a sudden perceptual change in which the animals saw the relationship of the sticks to themselves and the goal in a new way.

Learning in this sense is a process of problem-solving, a way of thinking, creating and synthesizing. Learning is much more than the acquisition of specific skills. We may refer to Koffka[11] when he explains "so long as activity is incomplete, every new situation created by it is still to the animal a transitional situation; whereas when the animal has attained his goal, he has arrived at a situation which is to him an end situation."

Brownwell[12] explicity writes:

"A problem solving attitude, an inquiring and questioning mind, is a desirable educational outcome and it is possible of development. The practice of 'learning' by cramming does not produce this outcome. The attitude is produced by continued experience in solving real problems, one consequence of which is that the learner comes to expect new problems and to look for them." Hilgard gives a list of characteristics of insightful learning. Insight implies intellectual ability in the learner. Much of the learning of very dull children is better regarded in the light of effect, conditioning and reinforcement. The able child gains most from insightful learning. He not only will understand the formulae, symbols etc. but also know the method of using them. The pupils may know Latin grammar but more than a knowledge of Latin grammar is necessary for successful Latin translation.

---

[10] Kohler, *The Mentality of Apes* (1925).

[11] Koffka, *The Ground of Mind* (1924)

[12] Brownell. W. A. "Problem Solving" in *National Society for the Study of Education, 41st year book, op. cit.*, p. 440.

In learning by insight, previous relevant experience, the need of all the aspects of the situation being open to observation, are very important. Problems-solution depends upon perceptual organisation.

Wertheimer's advice is to let the whole dominate the parts and never to lose sight of the problem as a whole even while devoting the necessary attention to details. Avoid 'piecemeal' thinking which is certain to be blind. Concentrate on the 'structure' of the situation. "Trial and error" can play no part in productive thinking except as an interference. He insists that it is possible to move straight towards the solution of a problem never losing sight of the deeper issue, never getting lost in petty details, in detours. Stephen[13] states, "the role of the teacher is to present whole patterns first and then relate any new information to them. The 'structure' presented at the outset should be the structure which can be readily and immediately appreciated by the students. But this appreciation largely depends on understanding of the meaning.

Transposability and Formal Training

The implication of the Gestalt law of transposability is that the whole pattern of experience may be transformed from one setting to another. The transposability of a cognitive configuration takes place like this Horse: hoof: : man:? (foot). The cognitive configuration relating horse to hoof is transposable to the new situation involving man, and the word foot is evolved as the fourth term of the analogy. Evidence of transposability of insights is revealed in invention and creative activity. It becomes possible for the inventor to see established insights in a new setting.

The problem of transfer is old. It appears in the names of formal training, mental discipline and transfer of training. It was one of Plato's canons: "Further have you ever noticed that those who have a natural capacity for calculation are, generally speaking, naturally quick at all kinds of study, while men of slow intellect, if they are trained and exercised in arithmetic, if they get nothing else from it, at least will improve and become sharper than they were before?" The theory of mental discipline lays more stress on the effect of the studies in training the mind than on the contents of studies. It is held that reasoning is trained by learning mathematics, memory by learning history and Latin disciplines thought. This theory of mental discipline is based on the assumption of independent faculties such as memory, reasoning and observation which can be exercised and disciplined by learning relevant subjects. This theory dominated nineteenth century educational thought.

---

[13] Stephens, J. M. *Educational Psychology*, Chap. 13.

James (1860) attempted to discover whether learning poetry — the first book of Paradise Lost was learned in 36 days in daily periods of 20 minutes — could improve his capacity for learning poetry by Victor Hugo. He had memorised 158 lines from Victor Hugo's Satyr in 132 minutes spread over eight days before learning Paradise Lost. After training his memory again, he could learn the next 158 lines from Victor Hugo's Satyr in 151 minutes. It took more time due to fatigue (he supposed). There was no evidence of transfer.

Slight tested the effect of memorizing poetry and tables and prose substance upon the ability to memorize dates, nonsense syllables, poetry and prose (literal) and prose (substance). The results of his experiment were varied. Little or no transfer was manifested in some instances; in some other instances a small amount of positive transfer occurred and in the others a negative transfer — they were all contrary to the assumption of formal discipline. Winch used school children to determine the value of training to solve arithmetical reasoning problems in solving other logical problems. Two groups of children were given logical tests. Then one group was trained for ten weeks in arithmetical reasoning and the other group carried on its usual school work without emphasis on arithmetical reasoning. The practical group did 30 per cent better in logical reasoning. Thus it can be assumed that training in arithmetical reasoning can be carried over in a helpful manner to solving other logical problems. Winch thus finds some sort of mental discipline and possibility of transfer of training.

Large claims have been made for the disciplinary value of studying formal grammar. Briggs made experiments with 54 students. Two groups equated in intelligence. The tests were given to both the groups. Next, Group I studied grammar for three months while the other children studied language and composition. At this, tests were again adminsitered. Then Group I studied language and composition and Group II studied grammar for three months. At the end, tests were again given to both the groups. They improved in one respect—the ability to see likeness and differences. Woody (1930) carried on some tests on the transfer value of French in studying English. French aided somewhat in increasing the rate of reading English. But English sentence structure and vocabulary were improved very little by the study of French.

Thorndike[14] in his experiments compared the gains in 'thinking ability' made by students studying various combinations of subjects. His conclusion was that the subjects studied were of little apparent importance, when the influence of the subject was compared with the initial ability of the students. The apparent superiority of mathematics and science in producing good thinkers is really due to the fact that better students take these courses.

A more recent study (Wesman[15] 1945) endeavoured to determine the transfer value of high school subjects to intelligence by obtaining measures of corelation between intelligence test scores and achievement test scores at the beginning and at the end of the school year. There was no clear-cut superiority for any particular school subject. Students who took the most courses made the greatest gains and (as shown in Thorndike's work) the bright students made greater gains than the slow ones.

---

[14] Thorndike, E. L., "Mental Discipline in High School Studies", *Journal of Educational Psychology*, Vol. 15, p. 83-98.

[15] Weiman, A. G. A. Study of Transfer of Training from High School Subjects to Intelligence, *Journal of Educational Research*, Vol. 39, p-254-264.

These researches of James, Thorndike, Wesman and others caused changes in the American school curricula. As no subject has value in training anything else, there must be as many subjects as are useful in life.

There are mainly two views about transfer of training: (i) *All learning is specific but if there be any carryover there must be identical elements in the two fields of learning.* Due to stimulus similarity transfer takes place—this was systematically treated by Thorndike. He held that a function is changed by another in so far as the two functions have identical elements of substance or procedure. This is Thorndike's theory of identical elements. Others have given their explanation in terms of identity of content, identity of procedure and identity of aim or ideals.

(ii) The theory of generation : Judd[16] showed how important it is to generalise and verbalise in his experiments on throwing darts at under-water targets. He compared the performance of a control group who had no instruction and that of an experimental group to whom an explanation had been given on the principles of refraction of light when it travels from one medium into another. Both groups were then given a trial in shooting with bows and arrows at underwater targets. Although both groups did equally well when the targets were at a fixed depth, the instructed group excelled the other when the targets were moved to a new depth. The learning of the principle had made them more adaptable under changed conditions. This is closely akin to verbalising the insight. Other writers have emphasised the need for common attitudes to both fields and the importance of this for the carry-over of ideals.

Recent writers insist on the importance of cognitively and consciously following the principle. Burt writes, "Common element is more likely to be useful if the learner becomes conscious of its nature and of its general applicability. Active or deliberate transfer is far more effective and pregnant than passive automatic or unintentional transfer. This seems to be essentially true where the common element is an element of method rather than of material."

---

[16] Judd, C. H., "The Relation of Special Training to General Intelligence" — *Educatioanal Review*, Vol. 36, pp. 28-42.

Thus in conclusion we may say that so far as cognitive aspect of learning is concerned, transfer of training is possible when active structuring of insights is made. The whole question of transfer of training and formal discipline turns on the extent of the insight of the learner.

Human Learning

The theories of conditioning, effect and reinforcement provide us with an account of how learning takes place. These theories minimise man's capacity to initiate learning and help to pursue a course of action solely to satisfy himself. Gestalt theories and Tolman's theory of sign-learning show us how the individual can be active in the solution of problems for its own sake. The learner makes detours to reach his end and will analyse a problem even when he is not motivated by need and hunger. Both theories fail to account for man's tendency to set problems before him and run the risk of defeat. They also render a very poor account of higher learning; that is, knowledge of truth, right and beauty.

Man holds a unique position in the biological world. He alone (not the animal) has the capacity for conceptual thought for holding beliefs and attitudes. He has ability to introspect and observe the working of his own self. Observations of both behaviour and experience are required to tell us about the nature of the self. Each person is aware of his own individuality. He is demarcated from the world outside. The self seems to be an organisation of values and attitudes. Some hold that the self has been formed gradually from birth by contact with society. We are thus persons so far as we partake of and contribute to society. Again, the self contains much that is egoistic or selfish.

In early infancy, it is found that the self is not clearly differentiated from its environment. Children would probably remain at this 'autistic' level all their lives if all their wants could be instantly fulfilled. They are forced to come to terms with the 'real' world. A child will have to accommodate himself to outside reality, but at the same time he is also capable of assimilating it to some extent. This double process makes extension of the self possible. The extension of the self takes place and this extension is partly dependent upon culture of which the individual is a member.

There are at least two ways in which an individual may react (for extension of the self) to his environment. He may react in a detached manner as when he catches the bus, ties his shoe-lace etc. He may seriously work out a problem, conduct a class etc. In the first kind of behaviour the self is not engaged whereas in the second, it is. Sherif and Cantril suggest the term 'ego-involvement' to differentiate between these two kinds of behaviour. "Ego involvement is a condition of total participation of the self as knower, organiser, observer, status seeker and as socialised being." We become involved in a social situation because of a threat to or enhancement of our status. When we master a new skill or acquire new knowledge, we are self-involved. One extreme case of self-involved behaviour is seen in self-sacrifice. This no doubt seems very strange but self-extension is in the best possible way made by self-sacrifice.

Much of human behaviour, however, is not ego-involved. Life would have been impossible if it were so. An adult cannot concentrate on every stroke of the pen when he writes out a few sentences. We leave much of our actions to the neutral automatic level and reserve involved action for important behaviour connected with our ambition and survival. Self-involvement means the absorption of the individual in the task in hand. It may be expressed in another way that the contents of the self have been generalised or transferred to the activity concerned. Self is made one with the activity concerned.

Self-involvement influences judgements of physical qualities or social facts. These ego- or self-involved standards are called frames of reference. A frame of reference functions as a perceptual context which exercises a selective influence upon the way in which something is perceived. A frame of reference may determine quantitative judgements. It is a common place observation that a person accustomed to a large house, or a large income, will judge as small a house or an income which would be judged as large by one accustomed to a smaller house or a smaller income. An important experiment by Sherif[17] (1935) has helped to show how subjective standards of this kind may be built up. Sherif chose for his experiments a highly ambiguous stimulus—a stationary pinpoint of light which, if seen in an absolutely dark room, is perceived to move. Since it does not actually move, any judgement as to how much the light moves is determined by subjective rather than by objective factors. (This illusion of movement is technically known as the autokinetic phenomenon). The subjects, sometimes alone and sometimes in groups, were instructed to report, in inches, how far the light was seen to move each time it was exposed. Sherif found that each subject working alone rather quickly built up for himself a characteristic norm.

Self-ratings as to character are also influenced by the ego. Prof. Bartlett has experimentally demonstrated how the cultural background of a person influences his perception and memory.[18] Bartlett's studies of the reproduction of stories are particularly informative. In one series of experiments, the subjects were given stories about mythological characters. Each subject repeated the story he had heard to another subject, and the latter, in his turn to a third and so on. The results showed among other things a definite tendency to remake the material in more concrete form, to condense much of the detail, to make the styles of the stories more nearly uniform, to rationalise or explain the account and to elaborate by adding new matters.

We have seen how the frame of reference which the individual builds up for himself influences his perception, memory, judgments and actions in situations which appear to have the marks of objectivity. Self-involvement helps in setting standards in ourselves, which we try to achieve and maintain. When a

---

17. Sherif, M., *The Psychology of the Social Norms*, 1936, Chapter 17.
18. Bartlett, F. C., *Remembering*, 1932.

person is actively involved in a task he sets himself a new standard to conquer—this is called the level of aspiration. He will raise his level if he succeeds and he will lower it if fails. By this theory of self-involvement we can account for much human learning which the law of effect fails to explain. Here we do not tend to repeat successful responses. Rather we take risks of future defeat by challenging our capacities by raising the level of aspiration. The theory of self-involvement and the allied concept of level of aspiration helps in explaining much of human learning which is left unexplained by the law of effect.

Learning inspires in us this kind of motivation by this concept of level of aspiration. In experiments on the accuracy of hitting a target, the level of aspiration is defined as the level of performance which an individual explicitly undertakes to reach. The whole situation comprises the following factors : past performance, setting of the level of aspiration, new action, feeling of success or failure at the level of attainment reached, future action, setting a new level or 'leaving the field'.

Mainly two factors determine the level of aspiration. First, there are personal factors—the immediate situation and the experience of the learner. Previous failure leads to lowering of the level of aspiration and success to a raising of the level.

The second are cultural and enviromental factors. The individual level of aspiration is affected by one's class or group.

The studies of levels of aspiration have shown that one of the important factors in determining the level of achievement which a child proposes for himself is his previous experience in like situations. Sears[19] in a systematic study of aspirational levels has shown the important effects upon future goal-setting behaviour when the child fails to achieve his stated goals. A child who fails is more apt than one who succeeds to develop unrealistic aspirations for succeeding performances. More specially he estimates his future performance so high as to be wholly impossible or so low that he is sure to attain the goal.

---

[19] Sears, P.S., "Levels of Aspiration in Academically Successful and Unsuçcessful Children", *Journal of Abnormal and Social Psychology,* Vol. 35, 1940, PP-498-536.

The over-idealisation of goals is due sometimes to culture. Influences of motion pictures, newspapers, fiction and advertisement give a romantic aura to may goals and idealize sometimes to such an extent that the pupils' aspirations are far from realistic. Because a youth is unable to attain his unrealistic ideals, he gets frustrated, and in turn this leads to demoralisation.

The average standard of one's group influences the level of aspiration. A 'bright' child for example in a class sets a level lower than his performance, whereas, a dull child will set a higher level.

The prestige of the group determines the level of aspiration of an individual. When an undergraduate student is told that his performance is below the performance of a high school student, he raises his level of aspiration considerably, but when he is told that his performance is above that of a high school pupil he drops it only to a small extent.

The feeling of success or failure can only be experienced by those who are self-involved.

The human learner, as opposed to animals, becomes actively committed to the task in hand. He challenges his own powers taking more difficult tasks to complete. Man is capable of learning values. He behaves morally, finds out beauty and searches for truth. Human learning begins as reinforcement, but soon passes into the phase of insight which provides the conditions for self-involvement and changes in the level of aspiration.

Development of knowledge, skill and aesthetic appreciation

The aim of education is the development of the personality of an individual through acquisitions of knowledge and skill.

Psychology helps education in the fulfilment of its aim, that is, in developing personality and is concerned with the processes of acquiring knowledge and skill. Development of knowledge takes place through perception, conception, generalisation, associative learning and appreciation.

Sense organs are the gates to knowledge. When a stimulus affects the sense organ, sensation takes pace. When for example air vibration as stimulus affects the sense-organ of the ear, auditory sensation occurs

But sensation, in order to become knowledge must have to acquire meaning—it must reach the perceptual level. Perception is the knowledge which is sensation plus meaning. Perception gives us the knowledge of the object which we perceive. Perception is a complex process and it is greatly influenced by the direction of our attention, expectation or desire. It also implies organisation.

Perceptual knowledge is limited to certain concrete, individual objects. We can perceive a particular man but the general concept of tree or man cannot be obtained through perception. Knowledge develops through the formation of concepts. Generalised knowledge is developed through the formation of concepts with the help of reasoning. It is a well known educational principle that education should start from the concrete to the abstract. Knowledge of an individual and a concrete object starts with perception. Reasoning by way of analysis, comparison and generalisation gives knowledge of abstract ideas. When the child is young, he is more occupied with his direct and immediate personal needs but when he grows up he is able to understand the needs and problems of others. He is gradually led to abstract concepts to understand the nature of problems affecting his community. Abstract concepts like truth, justice, etc. develop and knowledge grows. Judging, abstracting, conceiving, reasoning and in an extended sense, imagining, remembering and anticipating are forms of thinking.

ACQUISITION OF SKILL: When certain responses are systematically and proficiently made, we become skilful in our responses or performances. Boring[20] says "when we acquire through learning a co-ordinated series of responses which are performed with proficiency, we speak of the accomplishment of skill."

Acquiring skill and dexterity, in some respects, is very similar to memorising. Many of the ways in which memorising can be facilitated are also applicable to skill. The part which practice plays in acquiring skills has been studied in learning to type-write, to swim etc. Careful attention and active effort are also important here as in memorisation. Two new points attract our attention in a survey of the literature of acquiring skill. One is the existence of plateaus on curves of learning; the other the much greater permanence of skill over knowledge. Once a man has learned or mastered the skill of swimming, cycling or skating, he possesses the art for life. Even after a lapse of ten years the question of beginning to learn the skill does not arise. Very little practice brings him quickly to his former skill, and beyond. "Most probably this is because the neurone connections involved are on a comparatively low level, and not so far removed from instincts and reflexes as are those concerned in recalling a poem or a series of facts or an argument." The greater permanence of skill is due to the greater amount of overlearning.

---

[20] Boring and others, *Foundations of Psychology.*

Bryan and Harter in 1897-99, undertook a study of the stages in learning to send and receive telegraphic messages. Curves of learning were constructed, indicating the stages of progress toward mastery of the task over a period of many months. The 'learning curves' thus plotted indicated that progress was more rapid at first than later. Progress being measured in terms of the number of units which could be handled in a unit of time, the time devoted to learning yielded gradually less return as the task went on. Learning to receive telegraphic messages was frequently interrupted by periods of no progress; in these intervals, the learning curve presented very roughly a horizontal line, to which the name "plateau" was given.

Following the principle of "diminishing returns", the learning curve was found to reach a point where no further gains were apparent. Practice merely kept the subject upto his acquired standard. This last stage was entitled the "physiological limit" but the horizontal line of the physiological limit seemed to differ psychologically from the plateau; the plateaus did not appear to be genuine periods of no progress. They seemed to be periods in which the subject had reached the maximum attainable with a given method; G. Thomson observes, "Plateaus are flat places in the curve of improvement, periods during which little or no advance is made, though practice be continued with unflagging perseverance; after which there is again improvement, as though paths in the brain were gradually perfected, and then suddenly thrown open; as though canals were being dug, into which after much weary spade work the water rushes and communication is established."[21]

These plateaus may be due to the nature of the task, which requires in the first place certain simple acts which are learned rapidly, but then have to be practised for a considerable time before the next stage of combining them into complex acts can be attacked.

Want of interest, difficulty of the object of learning, bad habit, attention to the part and not to the whole of the work, inattentiveness, lack of co-ordination, employment of wrong method, physical condition, fatigue etc. are the causes of the existence of plateaus.

The Basic Principles in the Acquisition of Skills

Stress on the correct performance of the work from the very beginning should be laid. Often we do not follow the correct method but adopt a trial and error method to work out or learn. In these cases even with practice, learning and the acquisition of the skill are not adequate and it become very difficult to change learning acquired or habit formed through wrong methods.

Full attention or concentration on the actual task to learn should be given. Guidance to learn the skill methodically is very important. Piecemeal learning is not helpful in the acquisition of skill. The whole object, that is the component parts of a total, should be learnt to understand the structure. The component parts are the phases of the total, through which the total or the whole is revealed and they are not separate units. In learning the skill of driving a motor car, for example, one should learn to use the different parts of the car not as separate units but as a whole with co-ordination as one structure.

---

[21] G. Thomson — *"Instinct, Intelligence and Character"* p. 255.

Repetition of practice at short intervals of time is also very helpful in acquiring skill. Skill requires overlearning. This overlearning will leave no room for forgetting and will develop confidence.

Speed and accuracy are necessary in the acquisition of skill Often we neglect accuracy and lay more stress on speed but this negligence of accuracy may develop a wrong habit and the correct skill may not be acquired. Again, if there is no speed in learning, the skill will not develop and when learning is slow, it will be a handicap in acquiring the skill.

Motivation of the learner in the acquisition of the skill is very necessary. In the Gestalt theory of learning, we have seen that the learner may set aside immediate need satisfaction and "make detours in order to improve his skills." Motivation helps the learner to improve his skills. In this motivation the learner has a tendency to challenge his own capacities and set a new standard for the improvement of his skill.

AESTHETIC APPRECIATION: The standards set for the improvement of skills and mastery of knowledge also enter into the human values held individually. These values constitute the essentials of our innermost self. These self-imposed standards develop and control our moral code and our appreciation of what is true and what is beautiful.

What is this self? Man is different from an animal because he possesses a capacity for conceptual thought, for holding beliefs and attitudes and for entertaining and putting into practice complex ideas as duty, forgiveness and ambition.

This unique mental entity which lies at the basis of all complex activities is the man's self, which clearly demarcates him from the outside world.

This self seems to be an organisation of values and attitudes. There are some who hold that the 'self' has been formed gradually from birth by contact with society. We are not persons first and then members of society but we are persons in so far as we partake of and contribute to society.

This self-involvement in the acquirement of new skill also accounts for the beginnings of higher sentiments and values. This quest for standards of aesthetic performance in the matter of skill is regulated by the level of aspiration. An attitude develops for appreciation of the standards of beauty, goodness and morality. Aesthetic appreciation motivates a desire to fulfil the aspired level of skilfull performance. In aesthetic appreciation the motivation of need reduction is not helpful. The whole self of the learner is involved in securing the admiration of others by obtaining mastery of the skill. This self-involvement in learning and in the acquisition of the skill makes social learning possible. This social learning will explain the development of personal responsibility, democratic and autocratic behaviour, insight into the complexities of modern life, moral action and appreciation of values.

Questions :

1. What is learning? In which way is learning dependent on maturation? Describe the relationship between learning and maturity.
2. Do you think that "Stimulus Response Theory" of learning can explain human learning? Criticise the law of 'effect' in the learning process as propounded by Thorndike.
3. Discuss the importance of conditioning and learning by effect in the first stages of learning to read by a child.
4. Write a note on the training of children in terms of reinforcement.
5. What is the value of the concept of insight as used in the Gestalt theory of learning? Explain its applicability in class-room teaching.
6. Is transfer of training possible? How far is transfer of training dependent on "structuring of insights"? Discuss.
7. Is human learning 'self-involved'? Does self-involved learning imply motivation and level of aspiration? How?
8. What do you mean by a learning 'plateau'? Why does a plateau occur?
9. What are the basic principles in the acquisition of skills?
10. Do you agree that social learning is possible through self-involvement and acquisition of skills? How far is this social learning determined by sentiments and attitudes?

Chapter V

Individual Differences

We have discussed ways in which learning takes place but little has been said about individual differences. It has only been suggested that teaching helps the dull child to gain relatively more as it helps him in reinforcement and that the brighter child attains the stage of insightful learning very quickly.

We are to study now the individual qualities, innate and acquired, which make each child what he is. Each child is unique. Children with identical IQ's may be very different in other traits and may even be radically different in the distribution of their mental abilities. For example, two children may both score an I. Q. of 120 on the standard Binet test, yet one may be an excellent reader and the other almost a non-reader. Moreover, on the test itself, one child may score highly on the memory items while the other child will show his highest score on the problem-solving items. Even identical twins do have different personalities. When identical twins are reared apart, differences in temperament and personality may be even more pronounced. Individual children differ in abilities, aptitudes, attainments, interests and attitudes. There are also temperamental and emotional differences.

Differences in Abilities

Individuals differ in both the quality and quantity of their intelligence. Three broad categories of intelligence have been acknowledged in children when they are about to enter secondary schools. These are general intelligence, verbal intelligence (including ability in number) and practical spatial intelligence.

Variations in these three kinds of intelligence make allocation to different types of secondary schools possible, even though tests of verbal intelligence and spatial intelligence correlate to the extent of 0.5 owing to the common presence of general intelligence. The correlation between the National Scale Group Verbal and the Pass Along Test was of the order of +0.79. Alexander, however, disregarded this high correlation between verbal intelligence and performance tests. Even within general intelligence, it is possible to distinguish between memory and the ability to reason and find relations. Thurstone admits of primary abilities including verbal ability, word fluency, numerical ability, memory, spatial ability, reasoning and perception.

Individuals vary in respect of quantity of intelligence and in order to study such variations, we may consider the results of applying a verbal intelligence test designed for a group of 10-11 year olds. Generally it is found that published or unpublished tests contain about one hundred items and the mean scores usually fall within the range of 40-50 correctly answered items. The standard deviations in the distributions of scores are equal to 20 or thereabouts. These tests thus reveal a wide range of individual differences in the quality of general-verbal intelligence. Often we standardise test results to a mean of 100 and a standard deviation of 15. If this is done we obtain results similar to those shown in the table on page 103.

Peel reports that the 10-11 year old primary school children of a borough in the North of England were tested on two occasions, using similar but not identical tests. The second test was applied four weeks after the first. The correlation coefficient between the two sets of test results is +.94 and this gives a constancy between individual pairs of scores. The mean improvement of three points of I.Q. (101-98) is attributable to practice effect.

Terman[1] reporting on the results of a limited number of re-tests of individuals remarked in 1921 that "speaking roughly, fifty percent of the I.Q.'s found at a later test may be expected to fall within the range between six points up and four points down......... It is evident, therefore, that the I.Q. is sufficiently

---

[1] Terman L. M., *The Intelligence of School Children*, 1921, p. 148.

TABLE 1*

Standardised score	Percentage of children within this group	Description	Approximately suitable secondary and higher education
1	2	3	4
145 and over	0.2	Exceptionally bright	Universities and higher education
130-144	1.8	Very bright	Grammar schools, technical schools and technical colleges, universities
115-129	10.0	Bright	
100-114	38.0	Average	Secondary modern schools.
85-99	38.0		
70-84	10.0	Dull and Backward	Special class in secondary modern schools
55-69	1.8	Mentally deficient	Schools for educationally subnormal
Below 55	0.2	Idiots	cable in the Institutions (inedu- ordinary sense).

* Peel E. A., Psychological Basis of Education, Table 9, page 152.

constant to make it a practical and serviceable basis for mental classification."

The effect of repetition upon intelligence test scores, on investigation, has been found that there is rise in score when the identical test is repeated within periods ranging from a few days to a year.

Alkins[2] found that children taking three common group tests for the second or third time at intervals of a year obtained higher scores than children of the corresponding school grade who were taking the test for the first time. Similarly in the

---

[2] Adkins, D. C., "The Effects of Practice on Intelligence Test Scores", *Journal of Educational Psychology*, 1937, 28, p. 222-231.

Harward Growth Study[3] the median I.Q. in successive years rose from 102 to 113 when the same group intelligence test was repeated, but dropped to 104 when another group test was substituted. It has also been found that individivuals tend to maintain the same relative standing in the group in the course of practice, the correlations between initial and final scores of the same subjects being consistently positive and usually high. Such correlations indicate a tendency for the individual who is best in the group at the outset to remain at the top after practice, for the one who is lowest to remain at the bottom and so on.

It does not follow, however, that the exceptionally bright child will become a Newton, Shelley or Dalton. The child would need zeal, energy and opportunity. For a brilliant child his home and surroundings should be cultured and intellectually stimulating.

Dr. Fleming[4] points out that at a slightly later date, a series of studies began in which attempts were made to estimate by correlation techniques not merely the direction but the degree of the relationship between earlier and later performance. Analysis of a large number of these showed that the size of the correlation appeared to vary with the interval between test and re-test—dropping from about +0.81 for a time interval of less than two years to approximately +0.61 when the time interval was between five and twelve years. The Harvard Growth Study affirms that marked individual differences may be found among any age, sex, ethnic or maturity group at every period of measurement and marked variability in individual growth curves appears throughout the course of growth period (correlation fell steadily from + 0.7 to + 0.5 over intervals increasing from months to years).

At the age of 11 on an average, girls are noticeably superior to boys in verbal test scores. Expressed in points of I.Q the differences may be as high as 3 to 4 points. Boy's non-verbal scores are slightly superior to girls, the difference being of the order of one point of I.Q.

---

[3] Dearborn, W. F. and Rothney, J., "Predicting the Child's Development", *(School Article)* Published, 1941, p. 360.

[4] Fleming, C.M., *Adolescence*, p. 108.

Dr. Fleming, however, holds that boys and girls do differ in certain respects — in average physical development and in bodily functions. These differences in physique are however, accompanied by a large measure of overlapping in physical measurements, and they cannot be proved to be accompanied by corresponding differences in mental capacity or educability. Individual variations within sex groups are much more impressive than average differences between the sexes; and success in the differing activities of adolescence as of adult life are related much more closely to variations in training, in social expectations and in wishes than to what can fairly be described as biologically determined differences between the sexes (Adolescence, p. 103).

Individual differences in g-v intelligence vary so widely that it has led to several important implications in educational practice. Firstly it points to the need of small classes; when the child reaches 11 + it is advisable to stream classes. The concept of 'mental age' or 'subject age' had followed very readily from this. When the results of large-scale testing were analysed it was found that remarkable differences in 'subject age' were observable among children of the same chronological age.

$$\text{M.A.} = \frac{\text{I.Q.} - \text{C.A.}}{100}$$

It became customary to agree that teaching should be adopted to the differing requirements of different pupils—that it should somehow be individualised, as it is found that at 9 years of age (C.A.) the difference in M. A. between children of I.Q. 90 and 120 is equal to 2.7 years (10.8—8.1).

Aptitudes

There are variations in respect of quality of intelligence, which we have just now discussed. But psychologists are interested in the question of the potentiality which a person must have in order to be successful in a career or school performance. It is primarily a question of aptitudes on the one hand for academic, abstract and bookish education, and on the other, for practical, constructive, creative technical education. Three types of groups of pupils have been postulated: "(i) the pupil who is interested in learning for its own sake; (ii) the pupil whose interests and abilities lie markedly in the field of applied science or applied art; (iii) the pupil who deals more easily with concrete things than with ideas."

Are we to accept the view that the aptitudes for different fields of study really exist? Peel, Lambert, Watts and Slater all assumed that aptitude for technical drawing, wood work and metal work can be predicted by tests. The tests and other situations designed to measure aptitudes correlate significantly with later measures of attainment in grammar or technical school subjects. Howard[5] held that aptitude for Engineering Drawing is sufficiently well developed at the age of 13 to warrant forecasts of future activity. There is evidence for a spatial group factor which can be differentiated from one general factor and which enters into all spatial tests, the mechanical models tests, and all but one of the performance tests used in his investigation. The investigation provides no evidence in support of Cox's finding that a group factor for mechanical ability 'm' enters into the mechanical tests over and above the general factor. Emmett[6] states that the Morary House Space Test appears to be almost as good a measure of 'g' and 'k' as a verbal test is of 'g' and 'v'. Correlations between such tests and later success in the technical school are, however, not usually quite so high as between 'gv' and grammar school success.

The findings of factorial analysis do not lead us far. Moreover, it appears that there is a contrast between verbal, arithmetical and educational abilities (v: ed factor) on the one hand, and spatial, practical and mechanical abilities (k: m factor) on the other hand, but the v: ed factor enters prominently in all tests and jobs. It can be said, as Fleming[7] emphasised, that the k:m factor appeared to be rather fluid, vague, amorphous and heterogeneous group factor and its contribution to success even in mechanical trades was relatively small. Not only mechanical compression, mechanical information and assembly tests, but spatial judgement tests (e.g. Ravins Matrices), physical tests and manual dexterity tests, all had something in common beyond 'g' but they readily broke down into largely independent types.

---

[5] Howard, B.S., *A Study of Aptitude for Engineering Drawing at the Age of 13*, M.A. Thesis, 1964, (Unpublished), University of London.

[6] Emmett, W.G., "Evidence of Space Factor at 11 + and Earlier" — *British Journal of Psychology*, Statistical, 1949.

Differences between individuals in these respects are beginning to be recognised as differences in 'exposure' or training operating on individuals with many unrealised potentialities rather than as differences in type.

The aptitude tests are designed to measure later success in the grammar or technical school subjects and ultimately in vocations. The success is the criterion and the correlation between aptitude tests and the criterion gives the predictive power of the tests. But the choice of the criterion is very difficult. It has been suggested that the criterion we should apply will enable us to compare the abilities of children at the time of allocation with their performance in the later stages of the secondary school careers. Use of the criterion of subsequent achievement is supported by the thorough researches of McClelland[8] and his Scottish collaborators, who showed that it was possible by means of good entrance examinations to select children for academic courses leading to success in school examinations three years later, with the degree of efficiency indicated by the correlation coefficient of + 0.8 between initial and final achievement.

The criterion of subsequent achievement in an examination taken at 15 or 16 plus is open to the following objections, as pointed out in the First Interim Report referred to above by Dr. C. M. Fleming.

(1) It ignores the qualities that are not easily examinable and that ought to play a part in secondary school success.

---

[7] Fleming, C. M. — "Aptitude Testing", *Report of the Consultative Committee*, National Union of Teachers, 1949, P. 153.

[8] McClelland, W., Selection for Secondary Education, University of London Press, 1942.

(2) It assumes that school progress is mechanically determined and that variations in teaching, school environment, discipline and children's home conditions and changing interests affect achievement to an insignificant extent.

(3) As used so far, it does not allow sufficiently for uncompensated brilliance in one or two subjects only; instead it favours all round mediocrity. Thus, the subsequent examination achievement after one year of allocation is the best that can be used as criterion. More use of teachers' assessments on a five or fifteen point scale specially in the case of technical school criteria are found now.

The writer[9] uses the sum totals of standardised school marks in general subjects and in technical subjects obtained by the pupils after one year's progress in the school as criteria for technical school children. From a consideration of the subjectivity of the school marks allotted by the staff in order to estimate the children's ability in their school work, the writer thought it better to standardise these marks. This was done by reducing all the marks to 'T' scores making use of the formula—

$$T = \frac{10\,(X - M) + 50}{S.\,D.} \quad \text{Where}$$

X = the raw score
M = mean score
S. D. = standard deviation

The implication of all this is that all adolescents are capable of benefiting by continued education of a widely diversified type. Not all will learn at the same rate. But opportunities should be offered for intellectual, social and practical activities in all departments — whether these are 'academic or professional'; 'technical or practical'; and frequent re-arrangement of pupils should be accepted as not impossible.

---

[9] Mitra, J. P., Selection of Pupils for Technical, Commercial and Art Schools — A follow-up study — M.A. Thesis (unpublished) London University 1954.

Attainments

There are individual differences in school attainments. The attainments differ as they are the products of complex causes. Abilities, interests and opportunity all make for variety in the range of a child's attainments. In the past we laid stress on the attainment of the three R's which naturally limits the children's opportunity for enriching their experience and making a wide use of their powers. Objective test methods are now used to evaluate attainment in arithmetic and English. In secondary schools every effort is made to widen and enrich the pupils' experience. It is expected that the richer the curriculam in the secondary schools the better it will be for the children with different abilities and interests to develop.

In respect of attainment there are individual differences and we get trustworthy evidence of the quantity of attainment from tests of English and arithmetic. The range is very wide in the attainment of these subjects. Peel reports that objective tests of English, containing about one hundred items, testing spelling, vocabulary, usage, comprehension and punctuation, yield mean scores of some 40-50 correct answers. When given to complete 11 + age groups, the standard deviation is usually of the order of 20. Similar figures are also obtained from a one hundred item arithmetic test, in which the four rules in number, money, weight, time and length, and simple problems are tested. Simetimes the standard deviation of arithmetic scores may be a little higher. These statistics (m=40—50 @=20) represent a very wide variation between individuals.

The standard deviation of the distribution of mental scores is a function not merely of the test employed but also of the total experiences and attributes of the tests. Dr. Fleming points out that efforts to secure uniformity of performance by exerting social pressure upon dissimilar boys and girls are also as unwise and as unlikely to achieve success as comparable attempts to promote conformity to 'average' norms of height and weight by drastic exercises or by deliberate overfeeding. There is reason to believe that pupils who make very high or very low scores on mental tests at an early age, are apt to move somewhat nearer to the mean at maturity while those who score near the average to begin with are more likely to be found near the average when they have fully matured.

Interests

Interest in a particular subject is of great significance in a child's education. Interest in bookish or academic subjects differentiate a child from one who has interest in pratical and non-literary subjects. In the allocation of pupils to secondary schools, interests of children are of great help.

Lambert and Peel devised a method for assessing relative interest in academic and practical subjects. This method makes use of information and vocabulary tests. Each sub-test consists of six items of equal difficulty, three practical, three academic. The testee is instructed to answer only three of the six and in this way, by scoring his total practical and academic responses separately, it was possible to obtain a measure of the bias of his practical or academic interest.

We may define practical bias or interest by the expression.

$$\frac{100\ (P-A)}{100\ (P+A)}$$

Recently Peel compared boys who later went into grammar schools with those who were allocated to modern secondary schools and found that the grammar school boys had significantly higher academic interest before entering the grammar school than their primary school classmates who later went into modern schools. It may be observed, however, that primary school teaching with its slant towards book learning may influence the academic interest.

Lambert[10] made a survey of the interests and abilities of a group of boys, which was carried out in the country of Northumberland between 1947 and 1949. "One of the main purposes of the investigation" says Lambert "was to determine the distribution of abilities and interests of the group of boys in the hope that this would throw light on the educational frame-work which would be most in alignment with their needs." She found that the range of academic ability as given by the Morary House Verbal Intelligence Test was from 100 to 145 plus; the corresponding range of practical ability (Alexander's Performance Scale) was from 80 plus to 145 plus; while the bias of interest on the postulated scale, P/A index, varied from minus 83 (2 practical items, 32 academic items) to plus 47 (17 practical items and 7 academic items). The distribution of interest and abilities may be considered as falling roughly into three groups, each group merging into the next; that is, at one extreme is the group of boys with a significant bias of ability and interest in the academic field; at the other extreme is a group of boys with a bias of interest and ability in the technical field; and in between lies the intermediate group, the members of which have no significant bias of ability and/or interest.

---

[10] Lambert, C. M., "A Survey of the Ability and Interest of a Group of School Boys between ages of 11 + and 13 +" Ph.D. Thesis, (Unpublished) University of Landon, 1952.

E.A. Peel[11] holds that interest may be tested by making use of homonyms. Such words as street, span, fret, brace, tie, tender and spring have both practical and non-practical meanings. If these words are presented to 10-11 year old pupils as a vocabulary test, their interests are revealed by the meaning they give to the word. The test was applied to pupils in four modern secondary schools and the practical interest scores compared with sex and age. Differences due to sex were remarkable—boys being more practical minded than girls. Differences due to age were statistically significant but not so significant as in the case of sex. Dr. Fleming however observes, "Individual variations within sex groups are much more impressive than average differences between the sexes; and success in the differing activities of adolescence are related much more closely to variations in training, in social expectations and in wishes than to what can fairly be described as biologically determined differences between the sexes".

---

[11] Peel, E. A., "Assessment of Childeren's Interests" *Educational Review* Vol. 4, No. 2, p. 164. 1952.

Sex differences in interest for different types of activity are indicated by such interest tests as the Kuder Preference Record[12] designed specially as measures of vocational preferences. On the average, males show stronger preferences for mechanical, persuasive, computational, and scientific work. Female averages indicate greater interest in the literary, musical, artistic, social service, and clerical areas.

From these researches, it is evident that individual differences can be detected in the broad fields of practical and non-practical interests.

In conclusion, it can be said that (1) clear-cut differences in intellectual ability can be marked in general intelligence; (2) at 11 years of age two aptitudes—aptitude for academic, bookish learning and aptitude for visual, practical, mechanical attainments—can also be discerned.

There can be marked differences in attainments concerning English, arithmetic and English composition. In the field of interest, we can distinguish between practical and academic interests. These are all helpful to allocation and guidance, where education will be according to the ability, aptitude and interest and vocation, suitable to the individuals, meeting their differences.

---

[12] Traxler, A. E., and McCall, W. C. "Some Data on the Kuder Preference Record", *Educational Psychology*, 1941, 1, p. 253-268.

Questions :

1. Do individuals really differ? Why should we consider individual differences?
2. How would you show that individuals differ in both the quality and quantity of their intelligence?
3. From the study of individual differences how is an allocation of pupils to different courses of studies possible?
4. Do you consider that differences due to sex make boys more practical-minded than girls?
5. Should we agree with Dr. Lambert that boys and girls can be divided into two extreme groups, one having interest in the academic field and the other in the technical field? Discuss.

CHAPTER VI

Mental Structure

Faculty psychology presents the oldest structural theory of the mind. Mind is composed of a number of faculties, relatively independent of the others. The major faculties of knowing, feeling and willing have played an important part in the theories on the nature of the soul in the Middle Ages. Reid, the great Scottish philosopher, towards the end of the 18th century gave a list of thirty powers of the mind including the faculties of imitation, self-esteem, pity, duty, perception, judgement, memory, conception and moral taste. In the early part of the nineteenth century, the number of these powers increased to thirty seven. One of the most popular doctrines of the early nineteenth century was the phrenology of Gall which assumed that the strength of each faculty was indicated by the prominence of bumps on the appropriate parts of the skull. These faculties are the functions of the soul. These faculties constitute the different aspects of human experience.

"We may properly say that the singing faculty sings, dancing faculty dances, as the will chooses, understanding conceives"[1]

Institutions of common sense, introspection, self-observation and speculation would supply the means for knowing the faculties.

School subjects and methods of teaching are introduced as they are alleged to develop such and such faculty. Nature study stimulates the faculty or power of observation, learning poetry develops memory and so on. It was believed that the faculty of reasoning was rudimentary only in children until the age of twelve and memory was comparatively strong, so primary schooling should concentrate on drilling subjects. Scientific research has however largely contradicted these assumptions. Children of three years and even younger often reason out the solutions of problems that interest them.

---

[1] Locke, Essay on Human Understanding.

Tests[2] of reasoning ability have shown that from the age of about seven years onwards all forms of syllogistic thinking are employed by children and that the chief difference between old and young thinking is found in its content of experience and special interests rather than in the nature of the process employed.

Moreover, the capacity for learning new material increases with age and is much superior in the young adult to that of the seven year old child, as Thorndike has shown.

The theory of mental structure has a different back-ground. Faculties were defined as the results of introspection, whereas, mental factors constituting the structure of mind are studied by experimental methods. Different mental tests are applied to children or adults. The test scores are then analysed statistically and the underlying factors of mental ability are arrived at. This process of analysis is known as factor analysis.

Factors are not mental elements like faculties. "Factor is a construct which accounts for the objectively determined correlations between tests in contrast to a faculty which is a hypothetical mental power" — Vernon, P. E. Factors are regarded as categories under which mental or behavioural performances are classified. They are not like so many entities existing in the mind or the nervous system. Factor analysis is compared to analysis of a chemical compound to elements, but it is not true. Factors are too fluid, too dependent on the particular groups and on particular tests studied to be compared with elements. Factors in scholastic abilities, for example, are dependent on how school subjects are taught.

The empirical study of the mental structure can be traced back to Galton when he introduced the idea of correlating two sets of test results. "Correlation is the very kernel of the method of analysing mental ability into its factors". The measure of correlation between two tests is called the correlation co-efficient.

---

[2] Burt, C., The Development of Reasoning in School Children. *Journal of Experimental Pedagogy*, pp. 68-77, 1919.

Psychologists nowadays realize the fruitlessness of mental entities such as faculties, which can never be directly observed nor verified, and prefer to deal with concepts directly derived from measurable activities of human beings. An ability is inferred from the fact that some people carry out certain tasks more rapidly or more correctly than others. Whether it depends also upon some power in the mind is a matter which interests metaphysicians, but not scientists. The clue leading to a scientific solution of the impasse is provided by the term correlation. By means of correlation we can see whether the scores of a group of people on two or more tasks correspond or not and therefore whether these tasks involve the same or distinctive abilities.

We may find correlation between achievements in English and arithmetic, when high marks scored in English are associated with high marks scored in arithmetic and in each subject low marks also occur together. "This correlation can be expressed as a single co-efficient ranging in value from $+^1$ for perfect association to $-^1$ for perfect inverse association." The correlation co-efficient, now used, was developed by Pearson; it is symbolised by 'r' and is called the product moment correlation co-efficient. If several tests presumed to measure a particular ability do not correlate positively with one another, that ability cannot be accepted as a useful conception.

Memory, as an example may be considered as pointed out by Vernon.[3] We all know that a school boy may have an excellent memory for cricket scores or names of motor cars but a poor memory for school work. If these various kinds of memory are measured and inter-correlated and little or no agreement is found, it is obvious that there is no general faculty of memory but many specific varieties. We do not expect that such tests always correlate perfectly; they may show a limited amount of overlapping and some may correlate more highly with the rest than others do. But only in so far as they do correlate can they be regarded as measuring a memory ability or factor.

[3] Vernon P. E. The Structure of Human Abilities, p. 4.

Otherwise each test is merely measuring the ability specific to that test and to no other. Thus a test can be regarded as divisible into two portions which we call its communality and its specificity. Communality means the common element which a test bears with other tests and specificity is the specific virtue of the test itself.

Thus an ability 'implies the existence of a group or category of performances which correlate highly with one another, and which are relatively distinct from (i.e. give low correlations with) other performances.'

Vernon in his *Structure of Human Abilities* has shown the correlation co-efficients of six psychological tests of vocabulary, analogies, classifications, block design, spatial and form board.

Table I

STRUCTURE OF HUMAN ABILITIES

Correlation co-efficients between six psychological tests

Tests	1	2	3	4	5	6
1. Vocabulary	—	+.76	+.79	+.45	+.41	+.34
2. Analogies	+.76	—	+.68	+.44	+.35	+.26
3. Classifications	+.79	+.68	—	+.49	+.39	+.32
4. Block Design	+.45	+.44	+.49	—	+.58	+.44
5. Spatial	+.41	+.35	+.39	+.58	—	+.55
6. Form Board	+.34	+.26	+.32	+.44	+.55	—

An examination of the table suggests that the correlations between the first three and the last three are relatively small i.e. ability at verbal tests is partially distinct from ability at practical or spatial tests. But all the correlations are positive which shows that all tests have something in common, presumably of the nature of general intelligence. We can also find by appropriate techniques how far each test measures this general ability or the factor which we call 'g'. Now, if this was the only underlying ability, we could reproduce the test-inter-correlations simply by taking the products of their 'g' loading. For example: $r\ 3.5 = r\ 3g \times r\ 5g = .8 \times .5 = .40$. Such products are given in Table II and in Table III. Each product has been subtracted from the corresponding original correlation to show what overlapping, if any, remains. These are known as residual correlations.

Table II

'g' LOADINGS OF THE SIX TESTS AND THEIR PRODUCTS

Tests	g' loadings	Products 1	2	3	4	5	6
1. Vocabulary	.8	—	.56	.64	.48	.40	.32
2. Analogies	.7	.56	—	.56	.42	.35	.28
3. Classification	.8	.64	.56	—	.48	.40	.32
4. Block Design	.6	.48	.42	.48	—	.30	.24
5. Spatial	.5	.40	.35	.40	.30	—	.20
6. Form Board	.4	.32	.28	.32	.24	.20	—

Table III

RESIDUAL CORRELATIONS AFTER SUBTRACTING THE OVERLAPPING ATTRIBUTABLE TO 'g'

Tests	1	2	3	4	5	6
1. Vocabulary		+.20	+.15	+.03	+.01	+.02
2. Analogies	+.20	—	+.12	+.02	+.00	−.02
3. Classification	+.15	+.12	—	+.01	−.01	+.00
4. Block Design	−.03	+.02	+.01	—	+.28	+.21
5. Spatial	+.01	+.00	−.01	+.28	—	+.35
6. Form Board	+.02	−.02	+.00	+.20	+.35	—

The residuals between the first three and last three tests are not all zero, but are so close to it that they can reasonably be attributed to chance errors in the original correlations. Within each group of three, however, the residuals are large, showing that distinct verbal and practical-spatial abilities are present. Each set can be analysed separately, and if the loadings shown in Table IV are multiplied out, they exactly reproduce the residual correlations :

Table IV

Verbal factor loading		Spatial factor loading	
1. Vocabulary	0.5	4. Block Design	0.4
2. Analogies	0.4	5. Spatial	0.7
3. Classification	0.3	6. Form Board	0.5

Subsidiary abilities, over and above 'g' are called group factors, since they run through a limited group of tests. It is preferable to name them by symbols, such as 'v' for verbal and 'k' for spatial. Similarly we use 'g' to refer to the objectively established general factor instead of the subjective and indefinable term intelligence.

The communality of any test, i.e. its total factor-content, is shown by the squares of its factor loadings. Table VI lists these loadings, their squares, the communality (h^2), and what is left over from 1.0 i.e. the specifications. (Many factorists further sub-divide this term into the unreliability or error-variance of the test, and its true specificity. For example, if the reliability co-efficient of the vocabulary test is shown to be 0.94, then the error variance is 0.06 and the variance of the factor specific to the test alone is 0.05).

*Table VI

COMPLETED FACTOR ANALYSIS OF SIX PSYCHOLOGICAL TESTS

Tests	Loadings g.v.k.		Squares of loading g.v.k.		Communality h^2	Specificity $1-h^2$
1. Vocabulary	.8	.5	.64	.25	.89	.11
2. Analogies	.7	.4	.49	.16	.65	.35
3. Classification	.8	.3	.64	.09	.73	.27
4. Block Design	.6	$.4^k$	.36	$.16^k$	.52	.48
5. Spatial	.5	$.7^k$	25^R	.49	.74	.26
6. Form Board	.4	.5	.16	.25	.41	.59
Variance	.42	.3	8.3	15.0	65.7	34.3

(*Adaptel from E. A. Peel's — The Psychological Basis of Education

Thus we can state that the vocabulary test measures 64 per cent 'g', 25% 'v' and the remaining 11% is specific. The form-board test is much poorer test, only 16% of what it measures being attributable to the general factor, 25% to 'k' and 59% specific. Sugh figures are known as the variances of the factors, and the average variance of each factor is given in the bottom row. These figures represent the importance of size of the factors in this battery of six tests.

Towards the end of the nineteenth century, the long-held view on independent faculties was superseded by the belief in a single unitary ability. The American psychologists like W. James, Thornike and others made experiments on transfer of training and reinforced the view that the abilities are highly specific.

The Multifactor Theory of Thorndike

Intelligence is said to be constituted of a multitude of separate factors, each one being a minute element of ability. Any mental act involves a number of these minute elements operating together. If two types of mental activities A and B are more highly correlated than are A and C, the reason according to multifactor theory would be that the first pair has more elements in common than does the second pair. There is no such factor as general intelligence. It is atomistic theory. Thorndike himself admits however that the elements must combine together for a specific activity and so his 'atomistic' conception is useless. Thorndike also designed a test to measure the ability to deal with abstraction. His test is composed of four parts: completion (sentence): arithmetical reasoning; vocabulary and following directions (CAVD) test. Spearman calls this 'the anarchic theory' of mental structure. But it exerted a profound influence upto the 1930s.

SPEARMAN'S TWO FACTOR THEORY: In 1904, Spearman published his correlations between sensory tests and estimates of intelligence. There is the 'g' factor and other specific factors. The specialised abilities sugggested by Galton as explaining more specialised groups of activities could not be found. There were indeed specialised abilities, but each was so spefic as to be particular to a single test. A child's score on any test could be completely accounted for by a certain amount of general ability together with an amount of the specific ability required for the particular test — hence the name 'two factor theory'. It may be diagramatically represented in Figure-12

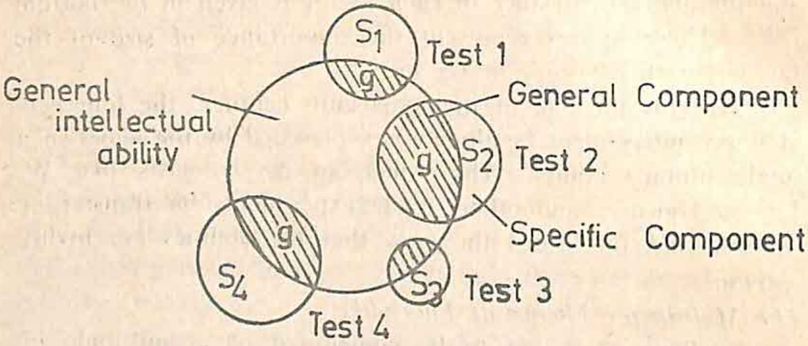


Figure : 12

The shaded portion represents the amount of 'g'. Some tests have more 'g' than others. Test 2 represents a verbal intelligence test which possesses a large amount of 'g' and test 3 is an art test measuring little 'g' but requiring much specific ability. The specific portion is represented by the unshaded area.

When correlation can wholly be accounted for by 'g', it tends to fall into what Spearman called a 'hierarchical' pattern. Later he developed the 'tetrad difference' technique of proving that no significant factors other than 'g' and specific are present. Spearman's two factor theory satisfactorily explained the tendency for all abilities to overlap to some extent and yet to show considerable unevenness. According to Spearman, 'g' is general mental energy with which each individual is endowed. The 's' factors are energies which could be activated by the energy. They are largely modified by education and training whereas 'g' is innate and not educable.

Spearman's neglect of groups factors :

He failed to explain types of ability which while being less general than 'g' are certainly not specific. He admitted that different number tests, mechanical tests and certain other types of tests show residual correlations over and above 'g'. But he says that it is specific overlap, which is very rare. Thus if we admit only 'g' and 's' it would be impossible to measure aptitude for mechanical or technical or linguistic work. We would measure only 'g'. But Spearman later on admitted the existence of verbal, arithmetical and mechanical factors, though he was inclined to view that they are probably the effect of training.

Thomson's sampling theory :

Thomson[4] assumed the mind to be made up of many independent powers. A test or school examination samples some of these powers or bonds. When two tests sample the same bonds then a common factor can be said to exist between them and when the tests sample different bonds, then the tests have nothing in common and each is specific. Diagramatically, it may be represented in Figure-13.

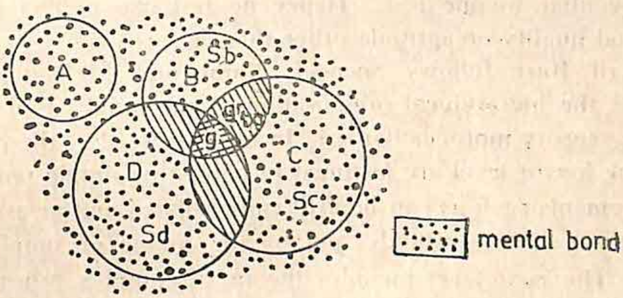


Figure-13.

Tests B, C, D have something in common — the powers sampled in the shaded areas. The deep shaded portion represents 'g' and the three shaded portions represent group factors and the unshaded parts represent specific factors. Test A has nothing in common with tests B, C and D.

The theory of "g"

Thomson not only explains hierarchy but also the two-factor theory. It also explains the relativity of any general factor. A test may be general in one battery, and may be specific in another battery. It also explains why more complex activities in mathematics, philosophy, English etc. possess more 'g' for 'g' is not unitary but complex[5]. But by way of criticism it may be pointed out that pure hierarchy is rarely available and that in most cases, the proportion of the terrad differences does not come to zero. This means that the simple picture of general and specific factors is not adequate. Spearman however later admitted the presence of group factors, such as verbal ability, numerical ability and speed.

---

[4] Thomson, G. H., Factorial Analysis of Human Ability.

[5] Thomson, G. H., "Factorial Analysis of Human Ability", Chap. IV,

The two factor theory of Spearman also fails to help in vocational and educational guidance and selection by tests.

In vocational guidance and selection for secondary education, special aptitudes for a class of closely similar occupations, say various forms of engineering, draughtsmanship, fitting etc. are to be found out by tests. Spearman's specific factors are each peculiar to one test. Hence no test can predict any intellectual quality or aptitude other than 'g'.

Cyril Burt follows Spencer, Stout and McDougall and assumes the hierarchical organisation of the mind based on the specific sensory motor activities. In his own words, "the processes of the lowest level are assumed to consist of simple sensations or movements such as can be artifically isolated and measured by tests of sensory 'thresholds' and by the timing of simple reactions'. The next level includes the more complex processes of perception (P) and co-ordinated movement (C), as in experiments on the apprehension of form and pattern or on 'compound reaction'. The third is the associative level — the level of memory (M) and of habit formation (H). The fourth and highest of all involves the apprehension or application of relations (R). 'Intelligence' (I), as the 'integrative capacity of the mind', is manifested at every level, but these manifestations differ not only in degree, but also (as introspection suggests) in their 'qualitative nature'.

Though it is not easy to have a battery of tests revealing Burt's hierarchy, on analysis of a mixed battery of tests, verbal, performance, a hierarchy is found.

Burt as early as 1917[6] specified three main group factors,

Geometry of Mental Measurement.

[6] Burt, Memorandum on the Distribution and Relations of Education Abilities, 1917.

viz, (1) verbal, (2) numerical and (3) mechanical. By the use of the method of simple summation, he shows, that up to the age of eleven, there are (a) verbal and (b) non-verbal abilities including practical abilities and arithmetical abilities which at that age are of mechanical type. For the average school subject the variance attributable to the general factor was 27.9 per cent and to group factors 20.7 per cent. Another interesting point was that the general factor correlated highly, but not perfectly, with an intelligence test. This suggested that general scholastic ability is largely made up of 'g' but involves, in addition, interest.

Stephenson and El Koussy employing Spearman's technique admit the existence of group factors. In 1931 Stephenson gave seven verbal and eight non-verbal intelligence tests to 1037 girls aged around ten to twelve. It was found out that a single factor, which he identified with 'g' was responsible for the correlations between the non-verbal tests. The verbal tests were more complex but behind their correlations with one another and with the non-verbal tests, there was 'g' and also there was a verbal group factor. It should, however be pointed out that Stephenson's results do not deny the existence of another group factor of a spatial-perceptual nature in the non-verbal tests.

In America, Thurstone developed an alternative theory of mental structure. He could find no evidence of a general factor underlying all metal activity. In 1931, he developed the centroid technique of analysis and applied it to measure attitude and to rate personality traits. Naturally he did not expect to have a general factor and small subsidiary group factors, but a number of components of more nearly equal variance. In a group factor analysis it is found that every test has a general factor loading and a loading on one or sometimes more than one group factor. In each type of analysis, every test shows its own specific factors.

In 1939 Thurstone published his investigation of human abilities — an analysis of 56 tests given to 240 college students. This analysis revealed a complete break with Spearman as 'g' could not be found at all, but much as in the personality field — a series of distinct multiple factors. The eight main factors are: V = Verbal P = Perceptual speed; I = Inductive reasoning; N = Number; M = Rote memory; D = Deductive reasoning; W = Word fluency; S = Space or visualisation.

The American multifactors are usually assigned capital letters, while British 'g' and group factors are given small letters. Though their content and deviation are very different, "the status of these primary factors is closely similar to that of 19th century faculties, against which Spearman had battled for over 30 years" — Vernon. Peel[7] however points out "it is clear that the data from which Thurstone obtained his primary abilities can be analysed equally well to give a general factor, group factors and specific factors, resembling the British view put forward by Thomson and Burt. In some of his more recent work, Thurstone finds a place for a general factor which in many ways resembles Spearman's 'g'." Spearman in 1939 points out that as all Thurstone's tests were positively inter-correlated, they could equally be analysed to yield a large general factor and smaller group factors. Such alternative analyses of Thurstone's figure were, in fact, carried out by Holzinger and Human (1938) and Eysenck (1939). The latter's 'g' obtained a variance of 30.8 per cent, and the combined group factors 23.5 per cent.

Relative importance of Factors — General, Specific and Group

The 'g' variance might amount to about 40 per cent, the major and minor group factors to some 10 per cent each. It becomes therefore possible to have good predictions of ability in education, industry or every day life by applying 'g' tests alone and more ground can be covered by tests of the main group factors. By detailed experimentation on tests relevant to particular jobs or by work-sample methods (i.e. trying out candidates on the actual work), we get more than 50 per cent accuracy in prediction.

It may be seen from Thomson's theory that 'g' is not a fixed, purely inherited quantity. Thomson interprets it as the total number of bonds. Presumably this is largely dependent on some psycho-physiological and innate property of the higher nervous system, but there is no reason why the number should not be affected by the use made of the mind and by organic conditions such as brain injury and aging.

---

[7] Peel, E. A., Psychological Basis of Education, p. 119.

The two major group factors (v: ed and K: m) are not in relation of opposition as it is often supposed. The majority of children who are superior educationally are also above average in mechanical ability, because of the common influence of 'g'. The Norwood Report's separation of academic and practical technical types of children is unsound because the child with high 'g' who is likely to do well at a grammar school would also do well at a technical school (c.f. Burt 1943). There may be children who are suited to grammar school education not because their 'g' is very high but because of strong v: ed factor and they may also be poor in k:m factor and so unsuited to technical education. Peel in a recent article speaks of the impossibility of devising tests for measuring technical ability apart from general ability. He says "in the case 'v' and 'k' tests it is at present impossible to devise a test which is free of general ability. Such tests measure 'gv' and 'gk' and on account of the common 'g' element, the tests always give results which correlate quite significantly. At best we may devise in the future, tests possessing a relatively insignificant 'g' content."

Some limitations of factor analysis

It will be a mistake to consider the whole of the psychology of abilities as factor analysis. In educational and vocational selection and guidance we should take account of personality traits, interests and home circumstances etc. We may use objective tests in preference to the subjective judgements of an interviewer but in practice we cannot carry out guidance work without the help of an interview. Moreover, the development of psychological science depends upon the experiments on conditions affecting the performance of skills and of mental tasks— studies of the learning process, of physical or mental fatigue "Here factor analysis is largely irrelevant, since it deals only with the end products of human thinking and behaviour, and throws little light on how these products come about in individual human beings." We cannot by analysis exactly say which factors an individual uses in any given performance. One individual through high 'g' may score well at a test, another by virtue of some group factor may also score the same in the same test and another through specific ability may have the same high score in the particular test. Factor analysis is of course complementary and not opposed to the approach of the experimental psychologists.

Again, as all techniques of factor analysis begin with intercorrelations, it cannot be denied that any circumstances which 'affect the correlation co-efficient will also affect the results of the factor analysis. It is found that the size of a correlation co-efficient is affected by the heterogeneity of the group of subjects upon whom the tests were applied.

Some critics of factor studies have been disappointed because not all factors seemed to measure practically significant mental abilities. Kelly[8] has expressed the fear that some of the factors are "mental factors of no importance". Factor studies only clarify what present tests measure. They cannot identify factors not built into the original tests. Moreover, test results are affected by the particular tests used, by the back-ground, sex, age and other characteristics of the populations tested.

SUGGESTED READING

Spearman, C., The Abilities of Man, (MacMillan, London).

Thomson, G. H., The Factorial Analysis of Human Ability, (U.L.P. London).

Vernon, P. E., Structure of Human Ability.

Peel, E. A., Psychological Basis of Education, Chapter VII.

Questions :

1. How would you repudiate faculty psychology-? What do you mean by mental factors? What is the difference between a mental faculty and a mental factor?
2. Define 'ability'. How does P. E. Vernon show that ability at verbal tests is partially distinct from ability at practical or spatial tests?

---

[8] Kelly, Truman L, "Mental Factors of no Importance", *Journal of Educational Psychology* 1939, 30, 139-142.

3. What is the significance of 'g' factor? How is the 'g' factor related to other subsidiary abilities?
4. Briefly describe and comment on
   a) The multifactor theory of Thorndike
   b) Spearman's two factor theory
   c) Thomson's sampling theory and
   d) Thurstone's multifactor theory of intelligence.
5. How would you justify that the two major group factors (v: ed and k: m) are not in relation of opposition, rather they correlate significantly and positively?

CHAPTER VII

Intelligence

Characteristics Traits of Intelligence

At the outset, we shall be careful about ascribing to intelligence powers which faculties were assumed to possess. Intelligence is an explicit mode of behaviour. We may study the problems of intelligence in two ways. In the first place, we are to consider the quality of intelligent activity. We may judge children by the way they carry out tests, by how they learn. By the observation of ourselves and others, we may find out essential features of intelligent behaviour.

In the second place, again, when we compare the attainments and capacities of a group of children or adults, measured by examinations and tests, by analysis of the results, we may arrive at the common qualities underlying their responses. Factor analysis is such a method. The content of the test is chosen as a result of the kind of thinking employed i.e. that which we think distinguishes intelligent behaviour determines the test and examination item.

Ebbing has stressed integration or synthesis in intelligent behaviour. Binet considered that good judgement and reasoning were essential parts of intelligent action. He stressed the significance of factors such as the ability to give and sustain attention to achieve certain ends, the power of ready and appropriate adaptation and the tendency to employ auto-criticism. According to Stern, intelligence is the ability to adjust oneself to new situations.

A group of psychologists thus prepared a symposium in 1921 attempting to clarify the situation. E.L. Thorndike stated that intelligence was the ability of the individual to make good responses from the standpoint of truth or fact; Terman asserted that "an individual is intelligent in proportion as he is capable of abstract thinking". Thorndike too like Terman felt that it was necessary to differentiate kinds of intelligence, such as abstract, mechanical or social. Thus one might conclude that intelligence is reflected by the individual's success in adapting himself to the various demands of modern life.

Burt also emphasises this aspect of intelligent behaviour and also insists on the all-round innate nature of intelligence. Thurston's description of intelligence as the capacity to make impulses focal at their early unfinished stage of formation is closely connected with Thorndike's association theory. Knight's[1] definition also draws attention to the associative element, the power to discover relations and is as follows : "In an intelligent act with reference to some aim we first discover the relevant questions of the objects and ideas and then evoke other relevant ideas. It is the capacity for relational constructive thinking, directed to the attainment of some end". An intelligent behaviour is motivated. If we expect to have the best results out of a child when we give an intelligence test we must ensure that the test stimulates him. Piaget[2] holds a novel view of intelligence. He writes, "Behaviour becomes more intelligent as the pathways between the subject and the objects on which it acts cease to be simple and become progressively more complex".

Spearman's 'g' is not identified with any particular mental process, but we are told very clearly in his work on the principles of cognition — and we can also infer from his test — what he thought were the important mental processes in intelligent behaviour. These are given in his two principles of cognition : (a) A person tends to find relations between the parts of any apprehended material; (b) If a presentation is apprehended by a person and a relationship presented with it the related experience or concept (correlate) is also evoked. As an example of the first, we might present the words hunger — food, and the relationship of eat or consume would come to the mind of most people.

---

[1] Knight R., Intelligence and Intelligence Testing.

[2] Piaget J., The Psychology of Intelligence.

Let us now consider the proposal made by Hamley that an intelligent person must be able to carry out the following operations : (1) classify material (2) find a name for a class of material (3) order the members of a class (4) correlate the members of two ordered classes. Hamley took his four principles from the field of mathematical logic.

Examples Illustrating Hamely's First Principle

Look at the following words and find out and underline the word most unlike the others :

apple *rose* pear plum apricot.

Second Principle

Look at the following words and find out and underline the general word of which the others are special examples:

apple, peach, pear, *fruit,* orange

Third Principle

Imagine the following words in order and underline the one which would come in the middle :

Shilling, six pence, half-crown, *florin,* crownpiece.

Fourth Principle :

Underline the word on the right which should go into the blank space :

rain, wet, fire....................burns, big, *hot.*

Different Kinds of Intelligence

When batteries of tests are applied upon groups of children in order to test intelligence in operation and the results are analysed, different kinds of intelligence are found out by different psychologists. Spearman speaks of the two factor theory of intelligence—the 'g' or general quality and 's' the specific quality peculiar to each test of the battery. Binet said much about intelligence but when he came to measure it, he used different kinds of tests involving different kinds of intellectual abilities. There are tests of perception, vocabulary, reasoning and memory. Did Binet therefore believe in different kinds of intelligence corresponding to the different categories of items of tests? Cyril Burt[3] investigated this problem and he found the evidence of group abilities each of which explained a genus of tests. He admitted a general factor (g) and the group abilities which he called respectively the verbal factor, manual factor, memory factor, discrimination etc. Factorial analyses of intelligence confirm beyond doubt that there are different kinds of intelligence. We have the list of primary mental abilities by Thurstone. These primary abilities are perceptual speed, number ability, word fluency, verbal comprehension, capacity to deal with spatial relations, immediate memory, inductive reasoning and deductive reasoning. These primary abilities can be resolved into more specialised factors.

---

[3] Burt Cyril, Mental and Scholastic Tests, pp. 138-39.

In England, much research has been carried out in this field and it has produced evidence of group abilities such as the verbal-numerical (or verbal-educational), v:ed factors, spatial factors (K : M) including space perception (k), practical ability (f) associated with performance material, and manual and motor intelligence (M). Kelly[4] in 1928 and Stephenson[5] in 1931 found verbal factor; Cox[6] in 1928 found a mechanical ability and Alexander[7] in 1935 found a factor of 'practical ability' which he termed 'F'. He maintains that the factor of 'practical ability' which he calls 'F' together with 'g' can be measured at eleven with reasonable reliability by a scale of three tests — Alexander's Passalong, Koh's block design and the cube construction tests — which are individual and not group tests. The question whether or not 'K' and 'F'' factors were one and the same was investigated by Price[8] who came to the conclusion that 'K' factor of Koussy — (the symbol 'K' for the special factor was first applied by Koussy, E.L. 1935) would seem to be the same as 'F' factor of Alexander.

---

[4] Kelly, T. L., Cross-roads in the Mind of Man (Stanford University Press, 1928).

[5] Stephenson, W., "Tetrad-differences for Verbal Sub-tests" *Journal of Educational Psychology*, May 1931, Vol. 22, pp. 255-67.

[6] Cox, J. W., Mechanical Aptitude (Methuen, 1928).

[7] Alexander, W. P., "Intelligence, Concrete and Abstract", *British Journal of Psychology* (Monograph supplement), VI, No. 19, 1935.

[8] Price, E. J. J., "The Nature of Practical Factor (F)", *British Journal of Psychology*, XXX, No. 4, April 1940, pp. 341-51.

These specialised group abilities are very important in connection with secondary education, higher education and vocational guidance, but many people do not realise their significance for the primary school. The data we receive from the research of Burt, Peel and Graham[9] show that the group abilities associated with verbal, pictorial, spatial and performance are found in children as young as eight years of ago.

Intelligence Tests

Intelligence tests are nothing more than achievement tests. They differ only in the point that they attempt to sample these achievements which are independent of schools. Broadly speaking there are two classes of tests for measuring intelligence — individual tests and group tests. Individual intelligence tests were first devised by Binet and Simon (1908) to measure the intelligence of mentally defective children. In 1916, Terman and his colleagues had spent five years in its construction and standardisation — Stanford Revision of the Binet Simon tests. Terman improved the reliability and validity of tests and he added several new items: e.g. the vocabulary and the fable tests.

In 1937, in collaboration with Mervill, he (Terman) published another revision and this is very widely used in English-speaking countries. It comes in two forms (L and M) and was standardised on a large group of children carefully selected from eleven States and from representative geographical areas and cultural levels. Different kinds of behaviour were obtained and measured by picture vocabulary test, number concept of three and comprehension II tests (belonging to Form M-year V), Verbal Absurdities III, Abstract words and Repeating[6] digits (belonging to Form M-Year X) tests were given for testing intelligence of ten-year-old children; for an average adult, Form M tests consisting of (1) Abstract words III, (2) Opposite analogies III and (3) Essential differences were given.

It is not possible to give the scoring and administration of the Stanford-Binet test in detail, but we should note that the child's mental age is determined by the number of tests which he passes at each level. When the mental age is found, the I.Q. is obtained by dividing the mental age by chronological age and multiplying by 100. A child having a mental age of nine years and chronological or real age of twelve years, will have I.Q. as follows:

---

[9] Burt, Peel and Graham, "The Differentiation of Ability in Primary School Children", *Research Review*, II, pp. 40-48; III pp. 31-34 (1951-52).

$$\frac{MA}{CA} \times 100 \text{ or } \frac{9}{12} \times 100 = 75$$

For some children, verbal test is unsuitable. Another type of test — the performance scale — was devised for use with the deaf and with children deficient in language or speech acquisition. Pintner and Peterson in 1917 published a scale of performance tests, Seguin Form Board test which is made up of ten blocks in geometric form — star, circle and so forth, and picture completion test. Kulhamn extended the Binet test downward for children as young as three months of age and Arnold Gessell extended it for children below three months.

Most intelligence tests have been devised primarily for use with children and youths. To meet the need of the adults, Weschler-Bellevre Intelligence Scale — a semi-performance scale to measure the ability of persons from ten to sixty — was published (1947). In 1949, the Weschler Intelligence Scale for children appeared, standardised independently. It may be used with subjects whose ages range from five years to adolescence. It consists of five verbal and five non-verbal tests with two alternative tests, one verbal and one non-verbal. Its validity has not yet been established.

In England, Valentine has also produced an individual test of intelligence, much in common with the various revisions of the Binet test. Most performance tests — Koh's Blocks, Cube construction, Alexander's Passalong, the Form boards and a Blocks test devised by Peel are also individual tests.

Group Tests

The advantage of group intelligence tests is that it makes possible the examination of large numbers of individuals at a time. Most group tests have been constructed on the theory that intelligence is a general ability. Two recently developed American tests — the California Short-Form test of mental maturity and the Chicago Primary Mental Abilities test, however, have been built on the theory that intelligence consists of many relatively independent factors. The California Short-Form test of mental maturity is designed to measure mental abilities in special relationship, logical reasoning, numerical reasoning and verbal concepts. The Chicago tests of Primary Mental Abilities have been developed by L.L. Thurstone. Seven primary factors are measured. In Great Britain, Thomson and his co-workers at Moray House are trying to have widespread use of group test material.

The tests normally require 20 to 60 minutes to do, for most are timed. Generally the test items are arranged in order of difficulty. There are principally two forms in which a group intelligence test can be set out; the omnibus form in which the subjects are to proceed through the test to a time limit set for the whole test; or the sub-test form in which the test is really made up of several smaller tests, each of which has separate time-limit and the items are arranged in order of difficulty. Each sub-test consists of one kind of item, for example, one is made up of analogies, another of reasoning problems and so on. It should be admitted that there are advantages and disadvantages in both kinds of tests. In the omnibus form, the subjects (the testees) are not disturbed and are left in peace for the whole period of testing, but the evidence has been produced that the long period of work leads to fatigue and boredom which becomes reflected in the test score. In the sub-test form, the subject is interrupted at the end of the time allocated to each sub-test in order to start him on the next, but the child's score is free from fatigue and reflects his real intellectual capacities.

Speed and Power Test

In a power group test, the items are arranged from the earliest to the most difficult and testee is given as much time as he requires to give answers to as many items as he can. (Thorndike's concept of altitude of intelligence). A speed test is composed of items of similar difficulty and there is time-limit for the test. This corresponds to Thorndike's concept of breadth of intelligence and the items of similar difficulty are drawn from different fields — verbal, numerical and non-verbal etc.

In selecting pupils for secondary education, tests generally used combine speed and power — the times are arranged in order of difficulty and time-limit is also set on the tests. It is sometimes said that the time-limit or this speed question may do injustice to the slow, accurate plodder. But evidence from correlating speeded and unspeeded tests shows that at 11 + the brighter child is also the speedier child. It is, however, believed that speed is a cultural factor linked with urban and industrial life and that a countryman by the nature of his life and work may tend to be slower.

The group test can be used more advantageously with normal children having a reading age of not less than eight years; otherwise the printed verbal instructions of the group tests may prove difficult. But by presenting the material orally as is done in the Moray House Picture Test this difficulty might be overcome.

In the standardised objective group tests, ambiguous questions are eliminated in the preparation of the material, so that the children's answers can be assessed objectively and quickly. In group testing the atmosphere and conditions being uniform the measure of intelligence becomes smooth.

Group intelligence tests may be verbal, pictorial or symbolic and spatial. Items of verbal tests are made of words and numbers. Typical examples[10] are: In each of the rows below the sentence on the left can be completed by two of the words or numbers on the right. Find these words or numbers and draw a line under them both. (The first one has been done for you).

A. A sheep is to wool as ―――――― is to ――――
lamb, *fur*, cloth, *rabbit*

1. Day is to sun as ―――――― is to
sky, night, evening, set moon

2. Courage is to bravery as ―――――― is to
brave, liberty, strong, freedom, free

3. 11 is to 10 as 110 is to ――――――
112, 108, 100, 12, 9

Verbal tests are used for selection for the grammar schools. The chief means of communication in society and the chief advancer in knowledge is through the use of words and so the assessment of verbal ability is very important. But the verbal test will be of less importance when a child's development and schooling have not been normal. Verbal test of intelligence makes use of learned material; otherwise the test will be invalid and it may lead to false measurement of intelligence. The reliability of the verbal test is very high.

---

[10] C. M. Fleming. V. S. 19.

Group pictorial tests are used for young children and non-readers. These tests involve verbalised thought through the medium of pictures, no reading attainment is needed.

Group non-verbal tests make use of abstract geometrical patterns and designs. Some non-verbal tests claim to measure only general intelligence 'g',[11] and others general and spatial intelligence 'g' & 'k'[12]. But the amount of general intelligence or 'g' measured by non-verbal test is rarely so high as that measured by a verbal test. Non-verbal intelligence test highly correlates with technical subjects implying spatial ability. The writer in his research[13] in connection with the selection of pupils for technical, commercial, and art schools finds a high correlation between V. S. 19 (verbal test of C.M. Fleming) and the total T scores of academic subjects $(r = \underset{\pm 0.152}{+0.468})$, and also a high correlation between V. S. 20 (Peel's non-verbal test) and the total T scores of technical subjects $(r = \underset{\pm 0.132}{+\ 0.568})$. Again the correlation between the non-verbal test (V.S. 20) and the T score of academic subject is rather low $(r = \underset{\pm 0.195}{+\ 0.323})$.

Reliability and Validity of Intelligence Tests

Tests, whether individual or group, must be reliable, that is, the tests must yield consistent results. When a person is tested on two occasions by the same test and the test score remains sensibly unaltered, then the test is considered to be reliable.

---

[11] N.F.E.R., Jenkins Test.

[12] Peel, E. A., N.F.E.R. Space Test, Moray House.

[13] Mitra, J. P. 'Selection of pupils for technical, commercial, and art schools —A follow-up study', M.A. Thesis (unpublished), London University, 1954.

Cronbach[14] says ".............. the concept of reliability is meaningless unless one postulates that two measures of the same functions exist. They may be successive measurements of a stable event, or simultaneous measurements of a unique event. But in regard to the non-repeating event which can be observed only once, reliability has only a theoretical interest".

The test-re-test technique seems to be the most satisfactory way of measuring reliability. Peterson, D. G. *et al*[15] writes, "The most satisfactory way of measuring reliability is to re-test a group of individuals with exactly the same test formerly used after a period of time sufficiently long to counteract effect from practice, and before there could be any considerable change in the subjects with respect to the trait tested. The correlation coefficient between the scores in the original tests and the re-tests may be used as a measure of the degree of correspondence between the two".

Objections to this Method

(1) When the test-re-test interval is very short, the method tends to give a spuriously high estimate of the reliability coefficient on account of the correlations of errors or memory transfer effect -- the fact "that bright persons tend to increase their score more on the second application of the test than dull persons".[16]

Peel[17] however does not agree with Ferguson's view and maintains: "With less able children the learning or experience gained from first test may not be sufficient to show marked changes in the second test scores. Assuming error effects have been efficiently extracted and that there is no tendency to ceiling effects the extremely able child may achieve his maximum learning effect within the compass of the first test and when he reaches the second test he shows less relative improvement than the child of more medium ability."

---

[14] Cronbach, L. J., "Test-reliability—its means and determination", *Psychometrics*, Vol. 12, 1947, p. 6.

[15] Paterson, D. G. *et al*, Minnesota Mechanical Ability Tests, The University of Minnesota Press, Minneapolis, 1930, p. 26.

[16] Ferguson, G. A., "The Reliability of Mental Tests", University of London Press Ltd., London, 1941, p. 81.

[17] Peel, E. A., "A note on practice efforts in intelligence tests", *British Journal of Educational Psychology*, 1951, Vol. XXI, pp. 122-125.

(2) If, on the other hand, a sufficiently lengthy time interval is allowed to elapse between the successive applications, traits variability may set in to lower the estimates unduly[18]. Under such circumstances, the fact that a certain test gives different results at different times is no evidence that the test is unreliable.

Again, "in practice it is often exceedingly difficult, if not impossible, to collect all the examinees on a second occasion and to spend the time and trouble necessary for repeating the whole test or the whole examination"[19].

The practical difficulties involved in a second administration of the same test to the same population are no doubt great. But it must not be forgotten that the test-re-test technique yields certain extremely valuable pieces of information, especially in connection with the constancy of the statistical constants such as the mean, standard deviation, which are unobtainable otherwise.

Kelly[20] suggests that when a test is to be used for group assessment purposes, a reliability co-efficient of 0.50 or higher is required. When the test is to be used for individual measurement purposes a reliability co-efficient of 0.94 or higher is needed.

At this stage, it becomes necessary to determine the significance or otherwise of a correlation co-efficient. The probable error is 0.67449 times the standard error. The standard error of a co-efficient of correlation is dependent upon the size of the obtained 'r' and upon the size of the sample 'N'. In the cases of large samples, correlation may be taken as differing significantly from 'zero' if 'r' is more than twice its standard error, or more than three times its probable error. When the size of the sample is small, the calculation for the standard error of the co-efficient correlation is made on the basis of the formula

---

[18] Thouless, R. H., "The unreliability and function fluctuation", *British Journal of Psychology*, Vol. XXVI, 1936, pp. 325-326.

[19] Burt, C., "The Reliability of Teachers' assessments of their pupils". *British Journal of Educational Psychology*, Vol. XV, 1945, p. 81.

[20] Mentioned by B. S. Bloom in on article entitled "Test Reliability for what?" *Journal of Psychology*, Vol. 33, 1942, p. 517.

$$\sigma r = \frac{1-r^2}{\sqrt{N-1}}$$

It is felt, however, that the significance of an obtained 'r' may be tested more exactly against "the null hypothesis", than in terms of PER or standard error$_\sigma$'r'. The method consists in comparing the 't' value for the obtained 'r'. The 't' for a given 'r' is found from the formula

$$t = \frac{r\sqrt{N-2}}{\sqrt{1-r^2}}$$ [21]

A simpler method of testing the significance of 'r' when 'N' is 50 or less may be found from Fisher R. A. Table VA[22]. Taking the four definite levels of significance represented by P = 0.10, 0.05, 0.02, and 0.01, the table shows for each value of 'N' from 1 to 20, and thence by larger steps to 100; the corresponding values of 'r' differ.

Not only the test must be reliable but it must be valid also, that is, the test must measure what the author wants to measure. The test must highly correlate with the criteria. Reliability indicates how consistently a test measures what it does measure. Validity represents the accuracy with which a test measures what it is supposed to measure. A reliability test that is not valid is likely to be useless. For example, in order to test appreciation in English literature if a test which contains only factual items about literature is applied, it is not probably valid for this purpose because it is possible for a pupil to have a considerable information about novels, poetry and stories and still he may hate literature.

---

[21] Garrett, Henry, E., Statistics in Psychology and Education, 1947, 3rd edition, p. 298.

[22] Fisher, R. A., Statistical Methods for Research Workers, Oliver and Boyd, 1950, p. 209.
1932, p. 92.

"The closeness with which a test measures the quality, it was meant to measure is technically termed its validity"[23].

Thomson[24] defines it similarly. He says, "by the validity of a test is meant the degree to which it does actually measure what it purports to measure" (here intelligence).

But as to the nature of intelligence or any definition of it, the psychologists differ. A tester may generally set up his own definition of intelligence and try to measure it by his test the criterion. The usual practice is to get the correlation between the scores of the new test and those on some previously published standardised test of intelligence. The early framers of group tests of intelligence generally used the scores on Binet-Simon tests as their criterion. Each of the tests used in Scale A, Army Alpha Group Examination, "was correlated with various other measures of intellectural capacity, such as officers' ratings, scores in the Stanford-Binet scale, grade location in the school and scores in other tests".[25]

To fifty of those who had been tested by the Stanford Revision, the Northumberland Group test was given and a correlation with Binet I.Q.'s of about 0.8 was found[26].

Terman however says — "It should go without saying that no existing scale is capable of adequately measuring the ability to deal with all possible kinds of material on all intelligence level. Accordingly the validity of a new test should not be judged entirely by its correlation with existing tests, however, good these may be"[27].

Spearman thought that instead of having a medley of tests like those in the Binet-Simon or those in some of the group tests, it is better to have a collection of tests or sub-tests which are highly saturated with 'g', so that we can find the 'g' of a testee more or less accurately. But as it is not possible to have a pure test of 'g' he would prefer to include in his battery a number of sub-tests with items neutralising the specific factors — the aggregate score yielding an accurate estimate of 'g'.

---

[23] Burt, C. — "The Reliability of Teachers' assessments of their pupils", *British Journal of Educational Psychology*, Vol. XV, Part II, 1945, pp. 80-90.

[24] Thomson, G.H., The Standardisation of Group tests, and the scatter of Intelligence quotients, *British Journal of Educational Psychology*, Vol. II,

[25] Freeman, F.N., Mental Tests, p. 129, 1939.

[26] Thomson, G.H., The Northumberland Mental Tests, *British Journal of Psychology*, Vol. XVI, Part 3, Dec. 1921.

[27] Terman L.M., Symposium: Intelligence and its measurement, *Journal of Educational Psychology*, Vol. XII, 1921.

Vernon[28] however points out "it seems possible that the intelligence which we recognize in daily life, life, in school work and other activities, and which we wish to measure or predict by our tests, is never pure 'g' but is always admixed with various group factors. And that very similar impurities occur in the items of the Binet scale so that the M.A.'s and I.Q.'s which it yields correspond excellently with our conceptions of intelligence."

The results of factorial analysis will show how far a new test of intellingence is valid.

An intelligence test not only will be objective, reliable and valid, but it must be standardised. A standardised intelligence test has always a better predictive value. Rutter claims in his investgation[29] that both the unstandardised and standardised intelligence tests gave a better prediction of the school subjects than either the English or the Arithmetic tests and the single standardised intelligence test had a predictive value almost as good as a battery consisting of the unstandardised tests in Arithmetic, English and Intelligence.

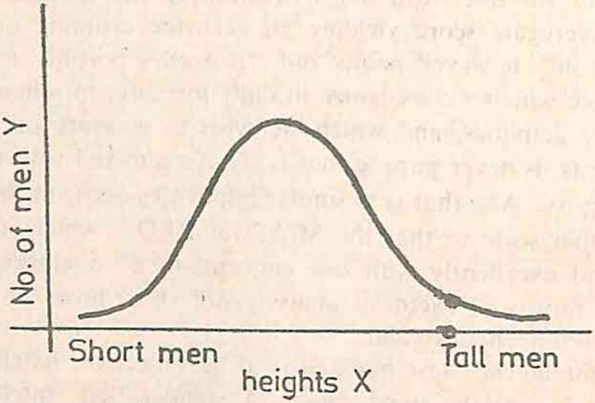
Prediction of the school certificate criterion by unstandardised tests on Arithmetic and English during the entry years 1934-36 ranged from 0.50 to 0.57 when an unstandardised intelligence test was added during 1937-39 prediction was raised to values ranging from 0.65 to 0.71. The single standardised intelligence test used for entry during the years 1940-43, gave predictions of 0.63, 0.43, 0.62 and 0.68 respectively.

In order to standardise the scores, we must know something about their distribution. When for example the heights of a large random sample of men are measured and arranged in a distribution according to the number of men possessing given heights, we obtain a frequency distribution. There being very few short and tall men and scarcely any dwarfs and giants, most men have average heights. Galton and his followers accept-normal distribution of frequencies as represented in the curve below :

---

[28] Vernon, P.E., The Measurement of Abilities, p. 194.

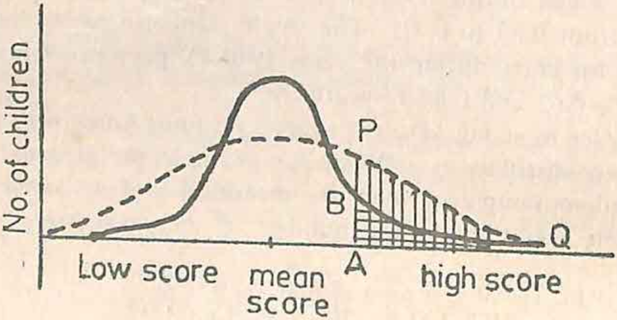
[29] Rutter, D., Unpublished M.Ed. Thesis, Durham, 1949.



We assume that many innate mental attributes including intelligence are distributed according to the same law.

Most children score marks round about the average or mean. The mean score for a group of children is the standard with which we compare the score of an individual child. We can say how far a child's score departs from the mean (negative if less, positive if more) i.e. his mean deviation.

But this mean score is not the only quality we are to know about the marks of groups of children :



In this figure, the dotted line represents the score of the same children in another test. There is difference between the distribution of marks scored in these two tests. The marks in the second test are widely dispersed — the highest marks are higher than those on the first test, and lowest marks are lower than any in the first. We measure the dispersion or 'scatter' of the marks about the mean by the standard deviation. Different tests are said to be standardised when their marks are referred to the same mean and the same standard deviation.

In order to work out 'M' mean, σ M, standard error of the mean, standard deviation σ, and standard error of the standard deviation $\sigma\sigma$, we may use the formula given below.

We may find out the mean score etc. of 24 children on a test score thus:

TABLE 7

Scores	Frequency (f)	Deviation (d)	Frequency · Dtviation(fd)	fd²
36-40	1	+ 2	2	4
31-35	7	+ 1	7	7
26-30	10	+ 0		
21-25	3	— 1	— 3	
16-20	3	— 2	— 6	12
			0	26

$$M = A \frac{+\Sigma fd}{N} X\ C$$

$$= 28 + \frac{0}{24} X\ 5$$

$$= 28$$

$$SD = \sqrt{\frac{\Sigma fd^2}{N} - \frac{fd^2}{N}}\ X\ C$$

$$\left(= \frac{\sqrt{26}}{24} - 0 \right) X\ 5$$

$$= \sqrt{1{\cdot}0833}\ X\ 5$$

$$= 5{\cdot}4$$

$$\sigma m = \frac{\sigma}{\sqrt{N-1}} = \frac{5.4}{\sqrt{23}}$$

$$= \frac{5.4}{4.796}$$

$$= + 1.084$$

$$\sigma\sigma \quad \frac{\sigma}{\sqrt{2\,(N-1)}} = \frac{5.4}{\sqrt{2x23}}$$

$$\frac{5.4}{6.782} = 0.77$$

Standardisation is also made on the basis of I.Q. It is known to us that when a bright child of ten years can do as well as the average child of fourteen years, he has a mental age of fourteen years and an I.Q. of 140. But here we are comparing a child not with other children of his own age group but with those of a different age group. It is desirable that we should compare a child with his own age group. This will be possible by first finding how the intelligence quotients of a large random population of children are distributed and then obtaining the mean I. Q. and the standard deviation of the I.Q. When this is done the mean I.Q. is about 100, which we might expect and the standard deviation is between 15 and 17 points of I.Q. When a group test is standardised to a mean of 100 and a standard deviation of 15, it may be said to be standardised to an I. Q. basis. This is in fact the basis to which nearly all British group tests are standardised.

Percentile rank

The rank array of scores enables us to form another important statistical concept. Percentile ranks are derived from this rank order. It would give significant information about any particular child.

It would tell us whether a child was in the top 5 per cent or in the bottom 10 per cent. For this, it is convenient to have all marks expressed on the same standard scale. There is normal distribution with mean 100 and standard deviation 15. This means (i) that the average mark is 100, and (ii) that the average of the squares of the deviations of the marks from 100 is 225 are the square of 15. A normal distribution is determined by a certain formula which is sufficiently illustrated by saying that for every 100 pupils on a normal distribution (M = 100, S.D. = 15), the number of pupils in different ranges of marks would be as follows:

TABLE VIII

64 or less	65-74	75-85	85-94	95-105
1	4	11	21	26
106-115	116-125	126-135	136-145	....
221	11	4	1	

It will be noted that approximately two thirds of the pupils get a mark between 85 and 115. A mark on this scale tells us how a pupil stands in relation to the general body of his fellow pupils. If his mark is 126 he is within the top 5 per cent. If he has a mark of 106, there are about two pupils worse than he for every one who is better.

If it is accepted that standardised intelligence tests should be reliable and that the standardised intelligence score remains constant it is expected that there should be a considerable degree of 'Constancy' in I.Q.

Constancy of intelligence score implies that as all the children of the same age develop each keeps his place in the ranks so that the boy who comes exactly half-way down the list at the age 11, will still be just half-way down the list at 14. 18 and 21. But such a proposition is contrary to our experience.

It does not mean that intelligence score is of no use for our purpose of selection or allocation of pupils to different secondary schools, but it is a warning against expecting too much of it. It is very difficult to predict by intelligence tests what a child of 11 will be at the age of 16.

Influence of external factors on intelligence

Even though we may accept intelligence as an innate quality in measuring intelligence we have to make use of material and situation which the child has learned through experience. We have to assume that the children tested have had a normal schooling and a normal home background. Performance in test depends on experience, background and knowledge of test material and methods.

The effect of practice may give rise to five points of I.Q. but this effect extends over intervals of upto six months. If the children tested have already had some experience of testing, the gain does not exceed three points of I. Q. It is generally accepted that bright children benefit more from practice in a test than dull children. Peel showed that practice effect increased upto a certain point (slightly more than one standard deviation above the average) and then fell off; but this was not confirmed by Wiseman and Wrigley who found a steady increase in practice effect with level of ability. The increases in score obtainel by bright children tend to be greater than those obtained by dull children. Between I. Q. 70 and I. Q. 125 there is a steady linear increase[39].

The effects of coaching — explaining the kind of items used, giving practice in the items, explaining the principles underlying the items etc. — are very marked, ranging from nine to eighteen points of I.Q. The highest result is obtained with bright children, having no previous experience of tests. Vernon is of the opinion that over-coaching does not improve the pupil's score beyond the earliest improvement and that the coaching effects wear off after a period of a few months. Wiseman[31] Demsptar[32] have also shown significant changes due to coaching affecting upto eleven points of I.Q.

The effects of schooling are no less important. Husen[33] in Sweden has shown that normal schooling gives a rise of five to seven points of I.Q. In a recent publication by the National

---

[30] Peel, E.A., "A note on Practice effects in intelligence tests", *British Journal of Educational Psychology*, XXI, June 1951.

[31] Wiseman S., Symposium on the "Efferts of Coaching and Practice in Intelligence Tests", IV — *British Journal of Educational Psychology*, XXIV, 1954.

[32] Dempster J.J.B., Symposium on "Effects of Coaching and Practice in Intelligence Tests", *British Journal of Educational Psychology*, Vol. XXI, 1951.

[33] Husen T., Influence of schooling upon I.Q. Theoria, XVII, 1961.

Foundation for Educational Research[34] we find the effects of primary and secondary modern schooling on intelligence test scores. The authors here show that continued schooling in the secondary modern school results in a fall in I.Q., whereas the schooling in primary school gives a rise in the I.Q.

The cultural influences also affect intelligence test scores. Different ethnic groups, as a result of cultural influences, tend to score relatively higher marks on verbal as opposed to non-verbal or performance test items. Jewish children often record higher scores on verbal material.

Intelligence and social class

Binet and Simon in 1911, compared the results of the Parisian children with those obtained by Decroley when giving the same tests to Belgian children. The results of the Belgian children were markedly superior — as they were children of professors, doctors, lawyers, and other people of 'superior' social standing.

C. Burt compared children attending different types of schools. Others have tried to classify the children on the basis of their fathers' occupations. Pressy (1919) tested 500 children whose parental occupations were classified into 4 groups — professional, executive, artisan and labouring. The result showed an average superiority of children of professional parents.

A large scale investigation was made by Duff and Thomson[35]. 13,220 elementary and 405 secondary school pupils were tested. Grouped in eight classes according to I.Q — 140, 130-139, 120-129, 110-119, 100-109, 90-99, 80-89, and below 80 teachers were asked to state the occupation of each child's parents. It was seen that there was steady change in average I.Q. with difference in social standing. It is important to note that any occupational grade contains children of high and low intelligence. An attempt was made to classify children in two groups according to their parents' occupation — Brain work and hand work.

---

[34] Watts, A. F., Pidgeon, D.H. and Yates, A., Secondary School Entrance Examination, N.F.E.R., Publication No. 6, 1952 (Newnes, London).

[35] Dug and Thomson, Social and Geographical distribution of intelligence in Northemberland, *British Journal of Psychology*, 1923.

TABLE IX

Brain work — 1,722 children Average I.Q. — 106.0
Hand work — 10,848 children Average I.Q. — 98.6

But each group contains children of all grades of intelligence. There is no ground for assuming that a given number of any class must be, by virtue of his social origin, inferior or superior in intelligence. If intelligence were determined by environment a higner correlation of intelligence and social class would be expected.

Terman and Merril hold that in general, men and women will gravitate toward occupational levels that are commensurate with their abilities; and if mental ability is inherited, their children will in a hierarchy of intelligence, be placed by tests at levels consistent with parental occupation. But this consideration overlooks the fact that many persons find themselves in occupation at levels below those warranted by their potentialities and vice versa and developmental, cultural and educational factors are also related to occupational and economic status.

TABLE X

Size of the family and intelligence quotient of children

	Average I.Q. of elementary school pupils	Average I.Q. of high school pupils
Professional	115	120
Business, Clerical	105	115
Skilled labourer	100	110
Semi-skilled labourer	95	108
Farmer	90	108
Unskilled labourer	88	105

Broadford (1926) Sutherland and Thomson (1926) and R. B. Cattell (1937) using predominantly pictorial tests found that on the average, children of the large families are less intelligent than those in small ones. Cattell's results were as follows:

TABLE XI

Average number of children	Average I.Q.
2.35	130
2.92	120
3.00	110
3.60	90
4.13	80

The average of children's intelligence does on the whole appear to rise with the occupational level of the parents; but the overlapping between one grade and the next is so great that while socially superior parents produce a relatively larger number of children of higher ability, mediocre homes produce an absolutely larger number. Correlations between the intelligence of children and their socio-economic level are positive but not high. They approximate to +0.3 according to most reports[36]. This is not surprising in view of the low degree of correspondence which is known to exist between intelligence and income.

Intelligence determined by heredity or environment[37]

Intelligence may be considered to be hereditary on the following grounds:

(1) Galton (1869) — High reputation as a fair test of high ability. Super-normal intelligence common in members of certain family.

(2) Closeness of family relationship —

TABLE XII

(a) Identical twins I.Q.	correlation is + 0.90
(b) Fraternal twins I.Q.	correlation is + 0.70
(c) Siblings I.Q.	correlation is + 0.70
(d) Parent-child I.Q.	correlation is + 0.50
(e) Cousins I.Q.	correlation is + 0.20
(f) Unrelated person I.Q.	correlation is + 0.00

(3) The mental difference between individuals of the same economic class are far wider—children brought up in most un-

---

[36] Fleming, C. M., "Socio-economic level and test performance", *British Journal of Educational Psychology*, Vol. XIII, II. 1943, pp. 74-82.

[37] D.H. Stott, "Interaction of heredity and environment in regard to measured intelligence", *British Journal of Educational Psychology*, Vol. XXX, June 1960, Part II, pp. 95-101.

favourable conditions may show extremely high I.Q.'s while children brought up under the best of conditions may be dull.

Development of Intelligence

A person develops as he passes through childhood and adolescence and attains maturity. He becomes capable of doing complicated tasks. In intellectual activity his powers may be said to develop in altitude. The term was first used by Thorndike by way of defining the quantity of intelligence.

We have seen that the ability to reason is an important component of intelligent behaviour and that the ability to discover relations is an essential part of reasoning. It was assumed that a young child (at about four years of age) would merely enumerate the items seen in the picture and that a little later (at six years) he would note the actions of the people. Relation-finding is very rudimentary at this stage, but between seven and nine years of age, the 'describer stage is reached, when the child is able to describe spatial and numerical relations between the items of the picture. Still later, he begins to make inferences; he may describe temporal relations. Soon after this the child may begin to list casual relations such as why people in the picture are carrying out the actions depicted. This last stage, called the 'interpreter' stage, was supposed not to be developed until the age of twelve and upwards. (This assumption is based on Binet's utilisation of a child's description of the contents in a picture to test his capacity to understand more complicated relations and finally to make inferences about the people in the picture).

Burt in Appendix III to the Hadow Report maintains that the changes in reasoning ability with age are mainly those of complexity. Isaacs also held a similar view. The child proceeds from simple relation-finding to grasping relations between relations. At the higher levels of relation-finding the child must be able to "analyse out a fairly complex presentation and to grasp its organisation as a system of logically presented ideas". Burt states that a child of seven can be taught to reason in number. Tests of reasoning ability have shown, for example, that from the age of about seven years onwards all forms of syllogistic thinking are employed by children and that the chief difference between old and young thinking is found in its content of experience and special interests rather than in the nature of the process employed.

Piaget[38] speaks of three phases in the development of vocabulary. The stages are called intuitive, concrete and formal. In the intuitive stage, the child can grasp only a single relationship at a time and that too in concrete material. When a four-year-old child is asked to arrange a series of sticks, he can say which of any pair of sticks is the larger or smaller, but he cannot serialise the sticks. In the concrete stage i.e. between the ages of five and eight, the child develops the capacity to combine simple relations between concrete objects, and it becomes possible to serialise sticks of different lengths. Piaget holds that although the five to eight-year-old can manage the practical problems, he would not be able to solve an abstract or formal problem. Piaget contends that the eight-year-old reasons formally i.e. he is capable of grasping single formal relationship though he fails to co-ordinate them.

For example, Edith and Susan are fair (single relation), Edith and Lily are dark (single relation), therefore, Lily is the darkest and Susan the fairest. This kind of problem can be solved by a child at least when he reaches the age of twelve. He can draw the conclusions formally without recourse to concrete operations. But most of the British educational psychologists differ from Piaget when he assigns different age ranges to each of the stages.

Piaget again in his recent work[39] gives a series of experiments on the development of arithmetical concepts in the child and of his ability in grasping number relationships. He first takes the problem of conservation. How does the child arrive at his belief in conservation of material?

The experiments :

(i) A quantity of liquid is poured by the child from one container to another vessel which is narrower and taller. The child is asked whether the liquid has changed or remained the same in quantity.

---

[38] Piaget J., The Psychology of Intelligence.

[39] Piaget J., The Child's Conception of Number.

(ii) Beads are transferred one at a time from one vessel to another of different shapes and dimensions. Has the number of beads changed or remained the same?

Piaget suggests that there are three stages in the progress of the child's judgment. The first is the *global* stage when there is no evidence of real quantitative analysis and the child firmly believes that the quantity has changed. Then the child passes to the *intuitive* stage when there is evidence of real analysis of the problem at the perceptual level, but if conditions are varied so that the perception becomes more difficult, the child fails to 'perceive' the unchanging quality of the material.

This second stage is better illustrated by Piaget's later experiments which he used to test the child's powers to correlate two classes. In one such experiment the child is asked to put a flower into each of six vases. The flowers are laid on the table. The confusion arises when the flowers are either put in a bunch together or spread out very widely — the child thinks either the flowers are fewer or more than the vases.

The third stage is the *operational* stage and the child's grasp of the unchanging quality of the liquid has become purely intellectual and independent of the accidence of spatial and material limitations. Operations are actions which can be carried out in thought. They are also reversible. They are also capable of being organised into structural wholes.

Piaget[40] tells us that there are four main stages in the construction of operations, and these extend over the period from birth to maturity.

First, there is the *sensory-motor* period (0-2 years) when the child can perform only motor actions. He has no language.

Secondly, there is the stage of *pre-operational thought* (2-7 years) when actions can be 'internalised' into thoughts. He is able to "co-ordinate his movements from place to place (when he walks about the room or in the garden) into a group, as well as when he turns objects round", but a long period will elapse before "he will be able to represent them precisely in thought".

---

[40] Piaget J., Logic and Psychology.

The third stage consists of *concrete operations* (7-11 years). Here the child can perform the operations of concrete objects, classification, serialisation and, co-relation of concrete objects, but these operations are fragmentary and fail to have a structural whole. This leads to the fourth stage when the child is capable of carrying out *propositional or formal operations.*

The three stages of pre-operational thought, concrete operations and *formal* operations correspond with the distinctions between global, intuitive and operational judgments.

This view of Piaget, however, is not fully accepted. Hyde[41] (1959) found that some children who were non-conservers in a test using plasticine balls were conservers when a liquid was poured from one vessel into another of different shapes. For example, when liquids in similar vessels A and B which certain children agreed were equal in amount, were poured into glasses C and D respectively, they agreed that the amounts in the latter vessels were equal in spite of great perceptual differences due to C and D being of entirely different shapes. Yet, when the liquids in A and B were matched again for equality, and the liquid in B was poured into a number of smaller vessels which were all similar to one another, some of those who previously agreed to conservation, now denied it. Beard[42] (1957) also found among sixty children aged 6 and 7 years that some who were non-conservers when comparing balls of plasticine, could conserve when water was poured from one vessel into a number of smaller ones.

Our interpretation of Piaget's view is that once the concept of the conservation of substance has been attained, it holds in all situations involving conservation of substance. Hyde and Beard do not support his view point.

Piaget's view that the child arrives at the concept because he is able to argue logically in concrete situations may or may not be correct. It is as Lovell and Ogilvie[43] point out "that the concept of conservation of substance — or indeed, any concept — grows out of the interlocking of several organisations of past impressions that normally remain outside consciousness (schemata) which in turn grow out of many and varied experiences. The child may then *invoke* logical argument to justify the concept which was obtained on other grounds. Or it may be that experience and the ability to use logical thought aid one another and bring about certainty.

---

[41] Hyde D.M., "An investigation of Piaget's theories of the Development of the Concept of Number", Unpublished Ph.D. Thesis, 1959, University of London.

[42] Beard R.M., "An investigation of concept fodmation among infant school children", Unpublished Thesis, 1927, University if London.

How long does the intellectual power of the individual continue to increase?

Two ways can be adopted in order to get information about this. A test may be given to various age groups of children and then the average scores of all the groups be compared. The other way is by follow-up studies on the same children. These are called longitudinal studies.

In many reports on adolescence, statements were made as to the growth of intelligence to the effect that the curves of growth formed "practically ascending straight lines from the age of three to that of twelve", that they then showed a "sharp bend" and became "practically horizontal from the age of sixteen onwards"[44].

It was implied that growth might be expected to be fairly similar for all pupils and that with puberty the maturation of intelligence as such came rapidly to an end. By some investigators the cessation of intellectual growth was represented as occurring as early as thirteen. Others postponed it to fifteen or sixteen. Indications of continued mental development are available in Thorndike's[45] study of adult learning and pointers in the same direction are given by the published results of many other tests used in recent years. The level of approximately fifty per cent of adult status seems reached by about the age of eleven; and growth appears to be still continuing at eighteen to twenty years[46].

---

[43] K. Lovell and E. Ogilive (University of Leeds, Institute of Education), "A study of conservation of substance in the Junior school child", *The British Journal of Educational Psychology*, Vol. XXX, Part IX, June 1960, pp. 109-117.

[44] Terman, L. M. and Merril, M. A., Measuring Intelligence, 1937.

[45] Thorndike, E. L., *et al.* Adult Learning, 1928.

This was also the approximate age at which improvement ceased in the standardisation data of the Wechsler-Bellevue Intelligence scale[47].

In a study made by Freeman, F.N. and Flory, C.D.,[48] some of the subjects who had been first tested at nine years of age were followed into college and were still making significant gains at the termination of the survey. There is some evidence, that individuals who continue their education longer tend to improve in intelligence test performance until a later age.

Of the Havard Growth studies[49], the two earlier studies covered only certain aspects of physical growth. The third completed in 1938, was based upon a wide variety of physical, psychological and educational measurements of approximately 3,500 school children in three Massachusetts cities.

The results of this testing appear to show that mental growth continues to about thirty years of age and that approximately two per cent of average mental growth may take place after twenty-one or twenty-two.

When the boys and girls are compared for their performances in verbal material, it is found that the girls begin to take a lead at 7 or 8 and maintain this until late adolescence, after which the boys overtake the girls.

From the cross-sectional studies on adults, we obtain the results that intellectual growth ceases to increase after the early twenties and soon after begins to deteriorate. Investigations by Wechsler, Miles, Jones and Conard and Raven all demonstrate the dimunition in intellectual power that begins at about thirty years of age.

---

[46] Brooks, F. D., "Mental Development in Adolescence", *Review of Educational Research*, Vol. VI, February 1936, pp. 85-101.

[47] Wechsler, D., The Measurement of Adult Intelligence, 3rd edition Baltimore: Williams and Wilkins, 1944, p. 258.

[48] Freeman, F. N. and Flory, C. D., Growth in Intellectual ability as measured by repeated tests, Monograph, Social Research of Child Development, 1937, No. 2, p. 116.

[49] Dearborn, W. F. and Rothney, J., Predicting the Child's Development, Cambridge. Mass: Sci—Art, Published in 1941, p. 360.

Moreover, the attainments in vocabulary and information, deteriorate less rapidly than the power to reason, to carry out unfamiliar non-verbal tests and performance tests.

In an important investigation[50], a vocabulary and three performance tests — (Knox cubes, Portues mazes, and Ferguson form boards) were administered to 375 men and 268 women of low socio-economic level, ranging in age from 15 to 76. The vocabulary test showed a rapid rise with age from 15 to 20 and slower rise upto 55, when a slight drop was found. The scores on the three performances tests, on the other hand, declined rapidly at the older ages.

Teachers and educationists are guided by the growth data for memory and reasoning in the matter of selection of tasks that can be reasonably expected from children. The use of concrete materials should not be pursued as an end in itself — it should rather be regarded as means to an end — the ability to master abstract thought. We must begin with simple relationship and build up more complex configurations of thought by inductive methods.

On the consideration of the development of memory and reasoning we should determine how far we should make use of rote memory and the child's powers to reason. In Appendix III to the Hadow Report, Burt points out that in the earlier years between four and nine, the child's ability to reason is not well developed and he finds that during this period, memory is the more economical means of acquiring information, but as soon as the reasoning power has developed, concrete and formal problems can be attempted. However, we depend heavily on memory at all stages whenever we meet new strange material.

The Differentiation and Integration of Intellectual Ability

It is generally believed that more specialised forms of intelligence develop with age, that the quality of intelligence changes as a child grows older. General mental ability tends to be differentiated into more specialised group abilities in response to differential schooling.

---

[50] Heston J. C. and Connel, C. F., "A note on the relation between age and performance of Adult subjects on Four Familiar Psychometric tests", *Journal of Applied Psychology*, 1941, 25, pp. 415-419.

During the early periods of life the child's abilities and activities are global. Clinical and observational studies of newly born infants and very young children show how the global motor activity differentiates into more specific movements[51].

A number of independent investigations[52] as Anastasi and Foley[53] point out are now available which suggest that abilities do in fact become more specialised as children grow older and their schooling take differing forms.

The correlation between vocabulary and the entire memory battery was 0.45 among the pre-school children, but only 0.06 among the college students. Burt in his early study (1917) showed that Spearman's two factor theory failed to explain the mental abilities of nine-year-old and supports the view of differentiation.

Burt[54] found that at every age both a general factor and several group factors were discovered, but there was a marked tendency for the group factors to become increasingly predominant with increasing age. During early childhood, specialisation is the exception rather than the rule. Upto the age of about 10, the general factor of intelligence (g) almost swamps the influence of the more specialised factors; nevertheless, the verbal factor (v) is clearly discernible even at the age of eight; about the age of twelve the special arithmetical factor (n) becomes more conspicous, though the general factor is still twice as important; the manual factor (mark) remains obscurely in the background.

Vernon[55] in his recent book states that he "at one time accepted the view that 'g' tends to differentiate into more specialised abilities during early adolescence and adulthood", but on applying the "standard British naval battery of five tests" to 1,171 boys leaving school at 14 and comparing the results with those of 265 seamen recruits of 18, he discovered that "the average inter-correlations and the 'g' saturations were almost identical". He considers the results reported by H. S. Williams in an unpublished Ph. D. thesis as "particularly striking". Williams applied a battery of intelligence, spatial, and mechanical tests to samples of 250 boys of 12, 13 and 14 years respectively, attending post-primary schools. The first factor variance rose from 51 to 62 per cent, "indicating that secondary education tends to produce greater integration of verbal and practical abilities". Vernon accordingly concludes that "there is no general tendency towards differentiation, except perhaps in early infancy, and that everything depends on the type of educational and vocational training".

---

[51] Carmichael, L., Manual of Child Psychology, Chap. I.

[52] "A developmental theory of intelligence", *American Psychology*, 1946, 1, 372-378.

[53] Anastasi and Foley, Differential Psychology, p. 513.

[54] Burt, C., "The Differentiation of Intellectual Ability", *British Journal of Educational Psychology*, XXIV, p. 85, 1954.

[55] Vernon, P. E. (1950), The structure of human abilities, p. 30.

Vernon also corrected some results of Balinsky who applied the Wechsler scale to several groups ranging from 9 years to 50 years of age, and found no consistent evidence of differentiation. Several research workers report either no change or a rise in the contribution of the first factor. Peel and Graham gave a battery of verbal, pictorial, spatial and performance tests to some 900 primary school boys and girls of nine years of age and again later when they reached ten years of age. They could find no evidence in support of differentiation and in fact the results seemed to be rather in favour of integration. The conclusions reached by Peel and Graham[56] support Vernon's view.

The reason for this conflicting evidence lies probably in the earlier weaknesses of experimental design—homogenous groups should not only be tested, but the tests should also be equally appropriate for all groups tested and difficulties there may also crop up due to practice if the same group is re-tested. The influence of schooling is also not negligible. As Vernon suggests if each subject is well integrated with the others and the formal school subjects have integration with outside experiences, the consequences would lead to integration. But if on the other hand different subjects are taught separately and the instruction is formal, the tendency would be toward differentiation.

---

[56] Peel, E. A. and Graham, D. (1951-52), "The Differentiation of Ability in Primary School Children", *Research Review*, II, pp. 40-48; III, pp. 31-34.

Lastly, integration of differentiation largely depends upon interests, background and teaching. Burt[57] says, "Judging from my own data, I should readily agree that, after the age of puberty, it is not easy to find evidence for further differentiation of abilities, though a specialisation of interests is often discernible".

In America, the earliest confirmation came from Garrett and his co-workers whose results seemed strongly to support the hypothesis of differentiation. In 1935, they published correlations between ten different tests (verbal, numerical and perceptual) applied to boys and girls at 9, 12 and 15 years of age; they reported in the older groups, a steady decrease in the size of the co-efficients and, therefore, in the influence of the general factor[58]. In the following year, Asch[59] described similar results with tests of verbal, numerical and general ability, applied to two different age groups; he too found a marked dimunition in the correlation at the age of twelve.

In a later enquiry, Garrett[60] found a correlation of 0-83 between the 'V' and 'N' factors in a group of third and fourth grade school children, in contrast to a correlation of only 23 among college students. He concludes that "as age increases, abstract or symbolic intelligence changes its organisation from a fairly unified and general ability to loosely organized group of abilities or factors". Garrett decides firmly in favour of the theory of emergent differentiation.

---

[57] Burt, C., *British Jonrnal of Educational Psychology*, Vol. XXIV, Part II, June 1954, p. 85.

[58] Garrett, H. E., Bryan, A. I. and Perl, R. E. (1935), "The age factor in mental organisation", *Arch. Psych.* No. 176.

[59] Asch, S., "A study of change in mental organisation with age", *Arch. Psychology*, p. 936.

[60] Garrett, H. E., "Differentiable mental traits", *Psychological Research*, 1938, 2, p. 259-298.

Bernreuter[61] puts the matter in a nutshell: "As the child gets older, more specific factors emerge, so that by the time he is an adult his mental activity is analysable into specific factors. and the general factor is of little importance".

Burt reviewed his own work in this field and also that of other workers in Britain and America and concluded that the "biological, neurological, and statistical evidence all appears strongly to support the view that with increasing age, intellectual ability tends to become more and more specialised".

Educational Attainment

Not only does a child develop in quality and quantity of intellect but it makes progress in school attainments. The relationship between intelligence and attainment is very close, for attainment is in part the measure of intelligence. But in separation from intellectual growth, we consider the development of attainment in English and Arithmetic.

The growth of attainment may be measured in terms of EQ and AQ.

$$IQ = \frac{\text{English Age}}{\text{Chronological Age}} \times 100$$

The English age is determined by a child's performance in 11 + standardised test of English. The achievement ratio (A. R.) in English or Arithmetic $\frac{EQ}{IQ} \times 100$ enables us to compare a child's I. Q. and E. Q. (or A. Q.). When a child' achievement ratio (A. R.) is less than 100, he is said to be retarded.

As general intelligence forms the basis of I.Q., it is expected that a child with high I.Q. should have correspondingly high E.Q. or A.Q., of course, on the assumption that his education and learning has been normal, since the EQ and AQ are based largely on the verbal factor of intelligence.

Educational attainments especially when measured by school or other examinations are naturally more complex because the factor of industriousness and interest which Alexandar calls X, plays a prominent part. Similar factors, variously called interest, study, or 'halo' have been reported in American investigations by Holzinger and Swineford (1939), Sisk (1940), Carrol (1943) and Comery (1949). Because of this, selection for secondary or higher education by means of 'g', 'v', or other psychological tests alone is usually less successful than selection which also takes account of previous school work (c. f. Mc Clellaud, 1942). Attempts have been made to measure personality factors relevant to scholastic success, but it is doubtful whether any are practically applicable on a large scale. Mc Clellaud states that "the number of misfits in secondary education are found to be increased by the use of teachers' forecasts and by giving allowance for personal qualities"[62].

---

[61] Bernreuter, R. G. (1953), "Implications of Research Studies on Intelligence", *Trans. New York, Acad. Sci.*, XV, pp. 301-304.

"The overall result" as Prof. Vernon[63] points out "is that such judgements add nothing worthwhile to estimates based on tests plus school marks, since anything of value which the average teacher knows about the industry etc. of his or her pupils is already embodied in the marks. At the moment, therefore, we know little about X, though further research would certainly be profitable".

Cronbach[64] observes: "Comparable tests measure growth from year to year, and compare the pupils' development in various types of behaviour. For this reason, the Iowa tests of educational development are more adequate than tests of single objectives, independently standardised .... when a test bears the responsibility of describing what a pupil knows and can do, and what he needs to attain, it will have to meet a high standard of validity. It is in this direction that improvement is to be anticipated".

In connection with reading attainment — backwardness and retardation in reading, norms of attainments for different ages etc. — a vast problem indeed — the readers are referred

[62] Mc Clellaud W., "Selection for Secondary Education", University of London Press, 1945, p. 168.

[63] Vernon, P. E., The Structure of Human Abilities, p. 38.

[64] Cronbach, L. J., Essentials of Psychological Testing, p. 300.

to the monographs by Schonell, Burt, Fleming, Hill and Highfield.

SUGGESTED READING

Knight, R., Intelligence and Intelligence Testing (Mathuen. London).

Piaget, J., The Psychology of Intelligence (Routledge, Kegan Paul, London).

Hamley, H. R., *et al.*, The Testing of Intelligence (Evans, London).

Vernon, P. E., Structure of Human Abilities (Methuen, London)).

Terman, L. M., and Merrill, M. A., Measuring Intelligence (Harrap, London).

Vernon, P. E., The Measurement of Abilities (University of London Press).

Anastasi, A., and Foley, J. P., Differential Psychology, Chap. 21 (Macmillan, New York).

Peel, E. A., "A Note on Practice Effects in Intelligence Tests", *British Journal of Educational Psychology*, XXI, June 1951. "Practice Effects between three Consecutive Tests of Intelligence", *British Journal of Educational Psychology*, XXII. Nov. 1952.

Questions :

1. What is Intelligence? How is intelligence defined by different psychologists? What are the different kinds of intelligence?
2. What do you mean by intellgence tests? Distinguish between individual tests and group tests.
3. How would you determine the reliability and validity of intelligence tests?
4. Why should an intelligence test be standardised? What steps are to be taken in order to standardise the test scores? Briefly describe.
5. Do you think that cultural influences also affect intelligence test scores?
6. How far is intelligence determined by heredity or environ ment?

7. Does intelligence develop? Briefly describe Piaget's three phases of development of intelligence.
8. How long does the intellectual power of the individual continue to increase?
9. What do you mean by differentiation and integration of intellectual ability? Give in this regard the views of Burt and Vernon.

CHAPTER VIII

Exceptional Children

Supernormal and sub-normal children — their educational ***needs***

INTRODUCTION: Individuals differ. Even children with identical intelligence quotients may be very different in other traits and may even be different in the distribution of mental abilities. We find that children differ in abilities, aptitudes, attainments, interests and in physical and emotional traits.

There thus arises need for planning education for children of different mental abilities and capacities. Some children are above normal and some below. Education for average children will not be suitable for those who are not average. The term 'exceptional' is thus used for those children who are not average. It is, however, admitted that the term 'exceptional child' is a loose one and it stands for a child who has uncommon or abnormal physical, mental or social development. The exceptional child may be gifted or backward.

Prof. W. M. Cruickshank[1] has given the following definition of the exceptional child:

"He is first and foremost a child. Secondly, he is a child who deviates from normal in some degree or other. Too frequently the community forgets that these children are children. Too frequently handicap is the facet of the child's life by which he becomes known to his teachers, to his friends, and even to his parents .... The degree to which the child with a handicap is accepted by his peers, his family and his community as a child and the degree to which he can accept himself as a child will determine the extent to which he becomes an exceptional child".

---

[1] Cruickshank, W. M., The Exceptional Child in Contemporary Education, 1952.

Exceptional children are either gifted, retarded, backward or handicapped and naturally this problem needs thorough enquiry. There may be confusion in using the terms backward, retarded, handicapped etc. Cyril Burt[2] holds "we may distinguish, first, between intellectual defects and those that are moral or temperamental; secondly between defects that are inborn and those that are acquired; thirdly, between those that are general and those that are limited or specific".

Intellectual subnormality is distinguished from temperamental. The child who is seriously lacking either in manual dexterity or in common sense will be regarded as intellectually subnormal, quite as much as a child who is unable to read, or spell, or work out his sums.

This intellectually subnormal child may be called 'backward'. It is often said that the boy who is intellectually subnormal is suffering from slow mental development because his intellectual growth has not kept pace with his years. This backward child is 'retarded' or 'slow'. The question therefore arises: will this slowness be overcome and will the backward child in the end catch up.

Burt makes a distinction between innate subnormality and acquired subnormality. A deficiency that is inborn or inherited can never be cured; a shortcoming that is not inherent, but springs simply from lack of health, from lack of opportunity, or from some such accidental cause, is in theory at any rate, is remediable.

The former may be called 'innately retarded' or in one word 'dull', the latter 'educationally retarded' or merely backward. Burt is of the opinion that no amount of coaching will ever transform the inborn dullard into a normal child. The pupil who is merely backward forms a different problem. "He is a knife without an edge — a good steel that has never been sharpened. He hacks away at his daily loaf; but will never cut true or smooth until he has been sent off to the repair shop to be whetted and set straight".

---

[2] Burt, Cyril, The Backward Child, p. 5.

General subnormality as distinguished from specific

A distinction is made here between general and specific abilities. When a child is backward in general intelligence his backwardness shows itself in all directions and when backwardness arises from an inferiority in one or other among the special factors of intelligence, it may be restricted to certain specific subjects only. Burt also holds that those whose intelligence is so gravely impaired that in the ordinary school they cannot be taught, and in after life are quite incapable of adapting themselves to ordinary social and economic requirements, are described as 'mentally defective'.

Thus, intellectual subnormality is distinguished from moral or temperamental subnormality. Intellectual subnormality is divided into four provisional groups: (1) the 'defective' — whose disability is innate and general and at the same time extreme; (2) the 'dull' whose disability is also innate, but far less severe; (3) the educationally retarded or 'merely backward', whose disabilities are not innate but acquired; and (4) the rarer cases of 'specific disability' whose defect is not general but limited.

Burt, however, admits that this division is not clear-cut. Each child must be considered as a unique individual. This psychological classification is nothing but a means to an end.

We consider here also three definitions of a backward child, retarded child and handicapped child taken from the *Dictionary of Education* edited by C. V. Good.

(1) BACKWARD CHILD : A general term referring to a child whose growth has been below the normal rate in a given aspect of educational, mental, social, emotional or physical development.

(2) RETARDED CHILD : (i) A child who fails to develop at the rate of the average child because of intellectual, social, emotional, educational or physical factors, singly or in combination; (ii) a child whose present grade placement is lower than the normal expectancy for the number of years of

school attendance.

(3) HANDICAPPED CHILD : A child whose physical, mental, emotional, educational or social condition places him at a disadvantage in comparison with a normal child. (Mentally gifted children are sometimes so categorised on the assumption that normal education procedures are handicapping to them).

The definitions give a very close relationship between these three types of exceptional children. In a backward child, we find his development has been below normal. The retarded child is also like the backward child. There is no major difference between the two. But in another definition, we find that emphasis has been given to the fact that when a child is not in a class in which he ought to be in terms of his age, he is considered retarded. As regards the definition of the handicapped child the same factors are there as are found in the backward or retarded. But the main fact is that it emphasises on the barriers due to certain physical, mental, educational or emotional factors. In the absence of these handicaps, the child would have been a normal one.

We have to remember that mentally gifted children may also be categorised as handicapped when the educational system does not care for their proper mental growth. Thus, a handicapped child is not always a mentally retarded child. A mentally gifted child may be handicapped.

It is better, therefore, to consider exceptional children in terms of their handicaps for the nature of handicap will be helpful in describing the various types.

Generally there are four broad types of handicapped children. These are : (1) The physically handicapped; (2) The mentally handicapped; (3) The socially handicapped; and (4) Those which combine all three.

The following subdivisions of the physically handicapped have been given by Frampton and Rowell : (a) Those whose handicap involves one or more special senses, including the blind, the partially sighted, the deaf, the hard of hearing and the deaf and blind; (b) those whose handicap results in motor disability or limitation, including orthopaedic cases (infantile paralysis, bone tuberculosis and congenital defects or deformities); cardiacs; those suffering from respiratory diseases in certain stages; malnutrition cases; (c) Those with various types of defective speech of whatever origin.

Frampton and Rowell have also provided further categories of mentally handicapped children. These are: (a) Persons who in natural intellectual capacity fall in the lower ranges of human intelligence; (b) Persons who have suffered accident or a disease resulting in the impairment of mental functions; (c) Persons suffering from emotional instability, psychopathic states and insanity.

Thus we find that there are various types of handicapped children and we cannot have a final list of classification or categories.

Physically handicapped children

Physically handicapped children are those who have some physical defects which are either innate or acquired. These are the deaf, hard of hearing, blind, partially blind, crippled, cerebral palsied.

The physically handicapped child naturally has to depend on others for fulfilment of his needs. Generally it is found that due to his inability to participate fully in his social life, a physically handicapped child also becomes socially handicapped. Not only is a physically handicapped child socially handicapped, but because of the physical handicap, the individual child forms emotional conflicts, mental tensions and frustrations. Thus it is clear that some kind of physical handicap leads to social and psychological handicaps as well. Teachers of the physically handicapped should therefore be very careful to avoid the adverse social and psychological repercussions on the physically handicapped children. Education of the handicapped children is a very important social problem. The first problem is how to minimise the physical difficulties faced by a physically handicapped child. Physical and medical aids should be provided to make the sufferings less. Innate physical handicaps cannot be cured but the acquired physical handicaps can be cured and sufferings can be minimised.

Another problem is to provide him (the physically handicapped child) with experiences helping him in social and emotional adjustments. It has already been pointed out that due to physical defects a child or person may develop certain types of conflicts and complexes and suffer due to them. Alfred Adler found that the root of neurosis was the inferiority complex which the child or the person derived from the sense of physical or 'organ' inferiority. This leads the patient to over-compensate by the development of fictitious goals and compels him to pursue exaggerated ideals, which he naturally finds beyond his strength. Failing to achieve them, he is precipitated into a neurosis, which excuses him from having failed to achieve his fictitious goal.

The Blind Child

Man is a creature that lives by his eyes. He relies more upon vision than upon any other of his senses. Our knowledge of things around us is so closely dependent upon our power to see, a great handicap is imposed upon the growing child by any impairment that affects the eye. Blindness is one of the major handicaps faced by many children. It may be due to hereditary causes or it may be the result of a disease or an accident.

According to the American Medical Association, the following are the types of visual defects :

(1) Absolute Blindness : inability to perceive light.
(2) Economic Blindness : inability to do any kind of work for which sight is essential.
(3) Vocational Blindness : impairment of vision which makes impossible for a person to do work which he had formerly done to earn a living.
(4) Educational Blindness : such loss of sight as makes it difficult, dangerous, or impossible to learn by methods that are commonly used in schools.

For the education of children suffering from absolute blindness the Braille system was developed. This is based upon a mechanism by which the letters are raised over the surface and the blind child recognizes them by his touch. The latest trend in education of the blind is to provide him 'integrated education'. This means that like any other normal child, a blind child should be given education with special assistance in subjects like Braille reading, mathematics, geography etc. Tape-recorder and the gramophone records serve like talking books. In the Soviet Union, recently a new machine has been invented "which scans the printed page and translates the visual word into a kind of Morse Code".

The education of the blind should make provision for learning of such skills as are likely to remove the visual barriers created for him. Rather, the blind child should learn such techniques as are helpful for him in acquiring knowledge and skill in his social life.

It cannot be denied that every person possesses some unique quality and in the case of the blind we are to find out the unique capacity or ability which he possesses and should help him to develop it to the maximum. The law of nature provides compensation for what is lacking in one. It is often found that the lack of the sense of sight is compensated when the blind person acquires musical ability. All types of effort should be made to help the blind to develop self-confidence in their special ability. In foreign countries, studies have been made relating to the problems of the blind in all spheres of life.

"Cumulative results from a number of studies indicate that the blind are able to perceive and avoid obstacles by change in pitch as they approach an object. Other factors such as change in loudness, odour, air currents and heat radiation are considered secondary or unimportant, although they may be helpful to persons in whom the pitch cue does not operate. The obstacle sense seems to exist naturally in some blind and some sighted individuals but may be learned by others providing that hearing is acute and intelligence is near normal or above. Practice improves the obstacle sense, though to varying degrees in different individuals. The findings have important implications for education of the blind and they give an indication of the progress possible through concentrated systematic research, the type of research which is still rather uncommon in the field of blindness"[3].

It is evident therefore that in the area of education for the blind, many things are yet to be done even in an advanced country like the U.S.A. It is often found that blind persons are some what more mal-adjusted than persons endowed with the sense of sight.

The Deaf Child

"The deaf are those in whom the sense of hearing is nonfunctional for the ordinary purposes of life". Deafness is a serious handicap in keeping in touch with social surroundings. Burt says, "Among boys and girls who gain scholarships, defective sight is by no means uncommon; but to find a pupil who is partly deaf and yet shows high ability in his work at school is altogether exceptional". "Not infrequently children are referred to the psychologist as cases of mental deficiency, when on examination they prove to be merely deaf". The instrument used is an audiometer and its units are decibels. When a person indicates a loss of over 60 decibels he is regarded as deaf. We are considering here deafness as one of the physical handicaps.

Causes of deafness

The Ministry of Education in 1952 made a survey to find out the causes of deafness. The following causes were mainly discovered : (1) Otitis media (2) Acute infectious diseases (3) Septic tonsils (4) Adenoids (5) Chronic rhinitis (6) Malnutrition (7) Eruptive fevers (8) Cerebro-spinal meningitis (9) Small pox (10) Congenital syphilis (11) Malaria (12) Mumps.

Evidently these causes may be classified into two groups — congenital and acquired. It is very difficult to control the congenital causes but there is possibility of controlling the acquired ones.

There are other factors which create problems for the deaf. Deafness is also associated with the problem of the acquisition of the power of speech. Normally the speech organs of a deaf child are in good condition but due to inability to use them he loses the power of speech as well. "This handicap of deafness gives rise to two formidable problems : first the acquisition of the power of speech and second the adoption of a suitable means of understanding the spoken language"[4]. These problems create difficulties in the education of the deaf.

---

[3] M. H. Fouracre in the Encyclopaedia of Educational Research (III Edn.)

Speech is not natural but an acquired faculty and depends upon the imitation of the spoken word. Speech being an acquired faculty which depends on hearing, the problem of teaching the deaf becomes complicated. This problem, however, has been gradually solved by a process known as lip-reading.

The deaf child is taught to study and interpret the movements of the lip of the speaker or the teacher in order to follow the language of the lip movements conveying the ideas. It is of course true that a considerable amount of time is taken by a deaf child to learn to interpret and understand the speech by lip-reading.

Normally the curricula for the deaf and the average children are the same. But the deaf children are to devote more time for acquiring manual dexterity as they have to depend on some manual trade in later life.

In the cases of partially deaf children, it has been found, hearing aids are very useful and visual aids are used for education of the deaf children.

It is not unusual to find that deaf persons are somewhat more unstable emotionally than those who are not deaf. Barker[5] has summarized the results of experimental investigations on the personalities and degree of adjustment of persons with impaired hearing. He states that children with impaired hearing are "more poorly adjusted, more unstable emotionally, and more neurotic than children with normal hearing." He concludes: Deaf children appear to behave more rigidly than physically normal children on tests of level of aspiration; children with impaired hearing tend to have more fears than children with normal hearing; that on unconscious levels the desire to communicate effectively is strong and sometimes assumes the character of an autonomous need but actually this desire is less frequently expressed than desire for other satisfactions.

---

[4] *Social Welfare in India* Publication Division, 1955, p. 277.

[5] Barker, R. G. Adjustment to Physical Handicap and Illness: A Survey of the Social Psychology of Phsique and Disability, Social Science Research Council, New York, 1953, pp. 233-34.

The Crippled Child

A child is considered crippled when he develops "a defect which causes a deformity or an interference with normal functioning of the bones, muscles or joints"[6]. As to the causes of this handicap it is found that infantile paralysis, congenital deformities, traumatic deformities, bone and joint tuberculosis, osteomyelitis, spastic paralysis etc. make a child crippled.

In studying the intelligence of the crippled children it has been found that "crippled children have been consistent in reporting a wide range of intelligence with the average quotient in the eighties. There is some evidence that children crippled by poliomyelitis are on the average superior mentally to other crippled chidren". The curriculum of the schools where the crippled children are educated not only includes the three R's but also instruction in occupational therapy and physio-therapy. The first physiotherapy centre was started in India in 1953 at the K.E.M. Hospital, Bombay. As regards the occupational therapy centre, it was started at the same place in 1950. Steps are being taken now in other States for the education and welfare of the crippled and the agencies like UNICEF are helping a great deal. It should be remembered that the way in which the individual integrates this emerging concept of self with all the other significant variables in his life will determine the harmoniousness or disharmoniousness of his adjustment. It is a fact that even a serious physical disability does not necessarily result in a distorted personality. However, a marked physical handicap excites ridicule often. An excellent example of this is found in Somerset Maugham's "of Human Bondage".

Mentally handicapped children

Another category of exceptional children is mentally handicapped children. A mentally handicapped child is one who is born mentally deficient or becomes so due to psychological and environmental factors. There is always a confusion in regard to the definition of the mentally handicapped. Terms like backward, retarded have been used for mentally handicapped children.

---

[6] Wadia, A. R., (Ed), History and Philosphy of Social Work in India, 1961, p. 335.

The famous French "Wild Boy" discovered near Aveyron forest in 1798 attracted the attention of the psychologists towards the problem of teaching the mentally handicapped. Seguin in 1839 established a school at Paris for the training of the feeble minded. Since then schools for the education of the mentally handicapped are being established in the civilized countries of the world.

It is very difficult to classify the mentally handicapped children. The terms like "simpleton, fool and idiot" have been used in the past indicating the various levels of intelligence. A person having an I.Q. of 70 or less is now considered as mentally defective. Doll[7] puts his objections to this and he believes that this criterion of I.Q. employs an illogical and invalidated statistical concept without safeguarding the welfare of the individual, his family or society. It further ignores the clinical varieties and the etiological origins. It stops short at an arbitrary statistical gatepost and does not concern itself with the many ramifications of the conditions which if adequately explored would reveal the absurdity of its point of view. He holds that a satisfactory criterion of feeble-mindedness involves four essential attributes namely, social (including occupational and educational) inferiority, intellectual retardation, developmental arrest, and constitutional deficiency or defect. None of these criteria may be omitted without weakening the concept. Thus mental deficiency in the limited sense of low mental test performance which is not accompanied by social incompetence is not synonymous with feeble-mindedness in its traditional and legal definition.........Similarly developmental deficiencies which are not primarily mental in nature and do not result in social inaptitude cannot be considered as the genuine feeble-mindedness with which the term mental deficiency has long been associated.

---

[7] Doll, E.A., "Is Mental Deficiency Curable"? *American Journal of Mental Deficiency*, 1947, 51, pp. 420-428; quoted by S.B. Sadason in "Psychologicall Problems in Mental Deficiency".

Thus we are to consider the categories of mentally handicapped from different angles. Based upon I.Q., the first classification is that of Terman. According to him, an idiot has the I.Q. of below 25. The I.Q. of an imbecile is between 25 and 50 and that of a moron between 50 and 70. The following table presents Terman's classification of intelligence :

Table-I

Classification	*I.Q. Range*
Genius	Above 140
Very superior	120-140
Superior	110-120
Normal or Average	90-110
Dull	80--90
Borderline	70--80
Feebleminded :	
Moron	50--70
Imbecile	25--50
Idiot	25

It will be better if we study the problem of mentally handicapped under three main heads : mental deficiency, mental retardation and backwardness.

Mental deficiency

This stands for persons who cannot be educated and thus it forms an important part of abnormal psychology. According to Page[8] "mental deficiency is a condition of subnormal mental development, present at birth or early childhood and characterised mainly by limited intelligence and social inadequacy."

Based on the classification of Terman, an idiot is a person whose I.Q. is below 25. It is believed that an idiot is unable to develop mentally and socially beyond the three years' age of a normal person. He can never learn to read or write and uses speech on the infant level. Most of the times he grunts and growls and at times uses a few monosyllables. He is always inferior physically and in nearly every instance possesses physical stigmata. It has also been found that idiots suffer from sensory defects, paralysis and convulsive attacks. Idiots fail to do anything for themselves. It also becomes very difficult to teach them ordinary habits of cleanliness. They become hungry quickly and devour like animals. The emotional life of an idiot is also very crude and his behaviour is mostly motivated by anger and fear.

---

[8] Page, J.D., Abnormal Psychology, 1947, p. 354.

Imbeciles are those who have an I.Q. between 25 to 50. Their mental age ranges from three to six or seven. Imbeciles having higher I.Q. than idiots can master simple routine tasks and with much patient instruction can learn to do simple kinds of work. They can learn self-care and they have the capacity for taking an interest in themselves, including their personal appearance. Although they can never acquire sufficient occupational skill to be self-supporting they can with adequate training, achieve some degree of personal independence and can even be economically useful in a sheltered environment. Mental growth rarely continues beyond the chronological age of twelve.

There are forms of chromosomal imbecility which are due to an excess chromosome. They are frequent in children of mothers past their prime. The X chromosome is the female chromosome. Two X chromosomes in every cell are typical of a woman, while one X and one Y chromosomes are characteristic of the cells of men. The occurrence of the XXX or XXY groupings means imbecility.

Morons have an I.Q. range from 50 to 70, although some psychologists have set the upper limit at 75. Their mental age range is from six or seven to ten or eleven. Social and emotional criteria are important determining factors with respect to this classification. A moron can be taught elementary habits and even can attain elementary education. A moron is lacking in reasoning and judgement. Other mental powers like that of memory and education are rarely found in morons. It is not easy to recognize a moron from his appearance. From the study of his behaviour and expression, it can easily be found that he lacks in originality of thinking and he is devoid of reasoning, judgement and constructive imagination.

Morons lack aesthetic abilities also. Due to their faulty social behaviour, they often create many problems. Morons can however be trained to do such work which is not complicated in nature. A moron can do general house work, laundry work, distribution of newspapers and look after animals.

Different studies have shown that the number of imbeciles is greater than the number of idiots and the number of morons is greater than the number of imbeciles and idiots combined. "It has been found that out of 100 mentally deficient persons there are 5 idiots, 20 imbeciles and 75 morons". Another important point is that mental deficiency is an inherent defect in the development of an individual. An idiot is the slowest in his development. The imbecile develops more rapidly than an idiot and the moron more slowly than an average person.

Mental retardation

There is a difference between mental deficiency and mental retardation. Mental deficiency may be referred to as intellectual defect which is not curable and mental retardation may be regarded as educationally backward in the technical sense as Burt[9] says "all those who in the middle of their school career would be unable to do the work of the class next below that which is normal for their age". These mentally retarded children may require temporary assistance for overcoming mental retardation. Sometimes, the term "slow learning" is used for such academic disabilities due to both environmental and personal factors. It is very difficult to set any limits in terms of I.Q. Dr. Peel[10] in this connection points out that a child's I.Q and A.Q. (achievement quotient) may be compared by the ratio 100 x (E.Q./I.Q.) which is called his achievement ratio (A.R.). When a child's achievement ratio is less than 100, he is said to be retarded. He is not working upto capacity and the main purpose of remedial education is to put this deficiency right.

Therefore, we shall consider the problem keeping in view the fact that mentally retarded are those "whose mental and social handicaps are not so severe as to prevent their being educated within the confines of the regular school system".

---

[9] Burt, Cyril, The Backward Child, p. 77.

[10] Peel, E.A., Psychological Basis of Education, p. 184.

In order to diagnose mentally retarded children, group intelligence tests, individual intelligence test, adjustment tests and achievement tests are used. Case study approach is not also unlikely. The education of the retarded children is a vast problem and the readers are referred to the monographs by Schonell[12], Burt[13], Fleming[14], Hill[15] and Highfield[16], where methods are suggested for remedial treatment, norms for attainments for different ages provided and results of research set out.

Eforts are being made to study the psychology of mental retardates. According to Ingram[17], "The mentally retarded child approaches nearer to the average child in sensory acuity and motor ability than in more definitely intellectual processes. The majority approximate success at their chronological age level most nearly in processes which call for eye-hand co-ordination and for motor response". It is significant therefore that mentally retarded children are able to comprehend concrete objects rather than abstract ideas. A mentally retarded child fails to relate easily any present experience with his past experience.

Gifted Children

It is generally believed that children with Stanford Binct I.Q.'s of 140 or above may be considered as intellectually gifted. These children are supposed to possess the potentialities for high achievement.

Those who are in the top 1 per cent with respect to intelligence possessing an I.Q. of 170 or above, may be called 'genius'. These extreme deviates usually have considerable difficulty in adjusting to environment dominated by individuals much less intelligent than they.

Terman has mentioned some of the characteristics of the

---

[11] Mognifico, L.X., Education for the Exceptional Child, p. 125.
[12] Schonell, F.J., Backwardness in the Basic Subjects.
[13] Burt, C., The Backward Child.
[14] Fleming, C.M., Research and the Basic Curriculum.
[15] Hill, M.E., The Education of Backward Children.
[16] Highfield, M.E., The Education of Backward Children.
[17] Ingram, C.P., Education of the Slow Learning Child, 1953.

gifted. He holds that a gifted person possesses high intellectual traits, persistence of motive and effort, confidence in his abilities and great strength of character. A gifted child, since his verbal intelligence is so high, would learn how to read much earlier in life than do average children. Terman[18] reported that 20.5 per cent of the California group that he studied learned to read before the age of five, 6.1 per cent before the age of four, and 1.6 per cent before the age of three. In a study by H. A. Carroll (1930) of "Generalisation of Bright and Dull Children" it was found that bright children possessed superior ability to reason, to generalize and to synthesise.

Gecell believes that superior infants are emotionally sensitive to their environment and display intelligent behaviour. Parents of gifted children report certain characteristics such as quick understanding, insatiable curiosity, retentive memory, unusual interest in numbers, relations etc.

Scholastic achievements of the gifted children

It is found that the educational quotients, however, are likely to be somewhat lower than their intelligence quotients. The differences between educational quotients and intelligence quotients are probably almost wholly the result of the failure of the school to adjust course content to the abilities of these brilliant children. It is not unlikely that children with intelligence quotients of over 170 experience an even greater handicap with respect to educational opportunities than do those with intelligence quotients between 140 and 150.

The gifted child often experiences considerable difficulty in adjusting to the typical school situation. A child, for example, with an intelligence quotient of 150 is capable of doing third-grade work when he is six years of age but usually he is forced to go through the routine of the first grade. This naturally leads to frustration and gives rise to disciplinary problem.

It is sometimes suggested therefore that the best way to deal with the problem would be to leave gifted children in heterogeneous classes and then adjust the course content and methods of instruction to their needs and abilities. Many gifted children without doubt develop behaviour disorders because of the school's failure to meet their intellectual and emotional needs. The rationalisation that "the gifted can take care of themselves" is merely a defensive attitude. Proper guidance is required for these gifted children. They need certainly a kind of education that will make it possible for them to develop to the full extent of their capacities. The parents and the teachers must co-operate to provide proper educational facilities to the gifted Freedom in the choice of courses for the gifted children is extremely necessary so that a gifted child may study according to his typical needs.

---

[18] L.M. Terman, *et al*, Genetic Studies of Genius, Stanford University Press, Stanford, California, 1926, 1,272.

Sometimes it is suggested that double promotion to a gifted child will be helpful but this double promotion may be harmful on the ground that certain subjects remain unlearnt. Moreover, when a gifted child goes to a higher class, he may not find himself in harmony with the grown up boys of the higher class and this difference in age may cause maladjustment. It is often found that the difference in mental ages, between extremely gifted and average children is so great that normal social adjustments are difficult to achieve. Such children are likely to lead lonely lives, seeking their satisfactions in solitary play. No child, not even a genius can remain unaffected by failure to be accepted by his peer group.

Sometimes ability grouping is being considered as a more psychological and useful method in the education of the gifted children. Provision for acceleration is also recommended as a moderate amount of acceleration results in better personal and social adjustment. It is admitted however that the effects of acceleration are not good in case of average students. It may be noted that acceleration is "(1) the process of progressing through the school grades at a rate faster than that of the average child, either by skipping grades or by rapidly mastering the work of one grade and moving on to the next higher grade; (2) advancement in mental growth or achievement beyound the average for the individuals of chronological age; (3) a general term including all administrative practices which result in completing a school programme in less than the usual time allotted"[19].

We conclude with the words of Dr. H. J. Eysenc[20] "The bright child, as diagnosed by the intelligence test, apparently grows up to be the intelligent adult, and unless emotional instability and maladjustment prevent it, it is the bright child who becomes the successful professional man or business executive".

Questions

(1) What is an exceptional child?
What differences do you mark in the following three types of children :
 (i) Backward child
 (ii) Retarded child, and
 (iii) Handicapped child

(2) How can the mentally handicapped children be classified on I.Q. basis?

(3) Is a gifted child an exceptional child? What are the characteristics of the gifted?

(4) How can the physically and mentally handicapped children be educated?

(5) What is the difficulty in educating a gifted child? How to prevent the frustration of a gifted child?

(6) Do you find any difficulty in helping a gifted child in social adjustment? Discuss.

---

[19] Good, C.V., Dictionary of Education. 1959.

[20] Eysenc, Dr. H.J., "The Bright Child Grows Up", Uses and Abulses of Psychology, p 82.

CHAPTER IX

Emotions

Structure of Emotions

We have seen that individuals differ in intellectual activity. Let us now consider the emotional and purposive aspects of man's life. Mc Dougall explained purposive behaviour in terms of instincts. An instinct in Mc Dougall's words "is an innate psycho-physical disposition which determines its possessor to perceive and to pay attention to objects of a certain class, to experience emotional excitement of a particular quality upon perceiving such an object and to act in regard to it in a particular manner, or at least to experience an impulse to action". Instincts being inherited and not learned are relatively fixed in their patterns of working.

An instinct is a pattern of response which has three parts. First, a situation is perceived or understood, then an emotion such as fear, anger, love is excited, and finally some action is taken, such as flight, combat, protection etc.

Mc Dougall himself observes: "Most definitions of instincts and instinctive actions take account only of their conative aspect, of the motor tendencies of which the instincts of animals are most clearly manifested to us and it is a common mistake to ignore the cognitive and affective aspects of the instinctive mental process". Some authors make the worse mistake of assuming that instinctive actions are performed unconsciously. Dr. and Mrs. Peckham, who have observed the behaviour of wasps so carefully have written "under the term 'instinct' we place all complex acts which are performed previous to experience and in a similar manner by all members of the same sex and race". Prof. Karl Groos, goes so far as to say that "the idea of consciousness must be rigidly excluded from any definition of instinct which is to be of practical utility." Mc Dougall continues 'if we neglect the psychical aspect of instinctive process it is impossible to understand the part played by instincts in the development of the human mind and in the determination of the conduct of individuals and societies......... instinctive actions may continue to be instinctive even after much experience of their objects. Nor is the instinctive action performed without awareness of the end towards which it tends".

From Mc Dougall's definition of instinct, we find that the pattern of an instinctive action is varied rather than fixed. Fear can be aroused in a human-being by a variety of situations and the resulting reactions may thus also vary from simple running away to no action or even an aggressive response. Mc Dougall[1] discusses the influence of intelligence on instinctive behaviour: "their dependence upon and overlaying by Intelligence reach such a point as to observe the existence of instincts from the eyes of man himself, especially those of sophisticated men".

Burt, supporting Mc Dougall's views says: "Instinct is a complex inherited tendency common to all members of a species impelling each individual (1) to perceive and pay attention to certain objects or situations (2) to become pleasurably or unpleasurably excited about these whenever they are perceived (3) thereupon to act in a way likely in the long run to preserve the individual or at any rate the species so acting.

Burt does not mention here any change in these inherited dispositions made by experience which an individual acquires during his life time, but he has made it clear that experience and intelligence play a large part in modifying instincts. He writes : "Human beings like other animals, inherit certain innate tendencies which influence their everyday behaviour at any rate during the early years of life. Four such tendencies (or groups of tendencies) are almost universally recognized — feeding, fighting, fear and sex -- there may be many others less easy to establish.

In man the modifications and elaborations of these instinctive tendencies, produced by personal experience, are more various, more numerous, and more far reaching than in any other animal[2].

---

[1] Mc Dougall. Outline of Psychology. p. 134.

Most of the human instincts ripen at relatively late periods in the course of individual development when considerable power of intelligent control and limitation of movement has been acquired.

Mc Dougall makes a distinction between habits and instincts. Habits are mechanical and they fail to explain the purposiveness of instinctive behaviour. "Habits are formed only in the service of instincts". In the words of Mc Dougall: "Take away these instinctive dispositions with their powerful impulses and the organism would become incapable of activity of any kind; it would lie inert and motionless like a wonderful clock-work whose main-spring had been removed[3].

Mc Dougall lists fourteen instincts and ascribes a specific emotion to practically all of the fourteen instincts. An emotion which accompanies the working of an instinct is a primary emotion and when two or more primay emotions are blended together, it gives rise to a secondary emotion. The following is the list of the instincts with their emotions:

Parental	*Tender emotion*
Escape	Fear
Combat	Anger
Repulsion	Disgust
Appeal	Distress
Mating	Lust
Curiosity	Wonder
Submission	Negative self-feeling
Self-assertion	Positive self-feeling
Gregarious	Feeling of loneliness
Food seeking	Gusto
Acquisition	Feeling of ownership
Construction	Feeling of creativeness
Laughter	Amusement

---

[2] Burt, C., Symposium: "Is the doctrine of instincts dead?", *British Journal of Educational Psychology*, p. 201.

[3] Mc Dougall, Social Psychology, p. 38.

Emotions in the narrow sense mean the feeling tone of a particular quality, the affective colouring of experience but in a more complex sense in addition to this affective tone there are perturbations of the body 'organic resonance' and a conative factor i.e. an impulse to do something. The bodily changes are essential elements of emotional states. Physiologists have discovered that in a state of anger or fear (emotion) the adrenal glands "secrete a substance of adrenation and throw it into the circulation of the blood".

James along with Lange put forward the James-Lange theory of emotion. Emotional experience is nothing but the experiencing of the organic changes produced by the evolving stimulus; emotions are of the same nature as sensations i. e. apprehension of changes going on in the body.

James[4] put the matter paradoxically when he said: "Common sense says, we lose our fortune, are sorry and weep; we meet a bear, are frightened and run; we are insulted by a rival, are angry and strike .... The more rational statement is that we feel sorry because we cry, angry because we strike, afraid because we tremble, and not that we cry, strike, or tremble, because we are sorry, angry or fearful as the case may be".

Bodily activities are needed in emotion but it is too much to say that emotion is nothing more than an apprehension of these states. The feeling tone and the experienced impulse are equally essential.

Rivers points out that no emotion is found to exist when the instinctive manipulative activity goes on successfully; fear for example as an emotion supervenes only when the activity ceases to be successful. Mc Dougall too admits that we are not aware of our emotions so long as we give ourselves wholly to action. Nunn[5] looks on the emotion "as local differentiation of the feeling that colours all the organism's hormic dealings with the world". He says: "It is true that in solving a scientific problem or repaying a good turn I am not swept along all the time on a full stream of wonder or gratitude. Nevertheless the worthwhileness experienced in such activities does seem in each case to be coloured, so to speak with the same colour as the emotions".

---

[4] James, W., *The Principles of Psychology*, Vol. 11, pp. 449-50.

[5] Nunn, Education: Its data and first Principles, pp. 157-58.

Let us now briefly discuss the structure of instinct and emotions. Instinct is stimulated by an appropriate 'key; that is, an appropriate stimulus must fit in the 'lock' of disposition to open it. Parental instinct for example is aroused by the sight, sound or smell of the animal's own offspring, but specially by its cry of distress. When aroused, it impels its possessor to protect the young. The emotional quality is tenderness or love.

This instinct is no less strong in a human being in whom ofcourse it becomes more or less intellectualised and organised as the most essential constituent of the sentiment of parental love. "Parental love must always appear an insoluble riddle and paradox if we do not recognize this primary emotion, deeply rooted in an ancient instinct of vital importance to the race".

The instinct of escape is aroused by stimulus of unexpected and sudden nature. The impulse is to run away for shelter and emotion is fear. Fear whether its impulse be to flight or to concealment, tends to bring to an end at once all other mental activity.

The instinct of combat is excited by any opposition to the free exercise of any impulse, any obstruction to the activity to which the creature is impelled by any one of the other instincts. We see how among the animals even the fear-impulse, the most opposed in tendency to the pugnacious may on obstruction give place to it; for the hunted creature when brought to bay — i.e. when its impulse to flight is obstructed — is apt to turn upon its pursuers and to fight furiously. Pugnacity or combat is accompanied by the emotion of anger.

The native excitement of the instinct of curiosity would seem to be any object similar to, yet perceptibly different from, familiar objects habitually noticed. "The goal to which this instinct strives is fuller apprehension or clearer perception and accompanying emotion is that of wonder".

The mating instinct — that is, the sex instinct in the narrow sense — is aroused by the presence of a suitable member of the opposite sex. The emotional phase is 'lust'. It is an essential element in the emotional conative attitude of human lovers towards one another; and that no matter how much the attitude and the feeling of refined lovers may be modified and complicated by other tendencies, nevertheless strikes the ground tone and supplies the chief part of the mental and bodily energy which is put forth so recklessly and copiously in the service of sex love".

The structural aspect of Mc Dougall's theory is seen clearly in his discussion of complex emotions and sentiments[6]

A complex emotion is derived from the simple emotion ascribed to primary instincts by the combination of two or more emotions. The fused or complex emotions may be organised about specific objects and concepts. These constellations or structures of emotion about specific objects are called sentiments. Such an organised system of emotional tendencies centred about some object is called 'sentiment' by Shand. Sentiments are learned and structured whereas emotions are ways of functioning that have not been learned. Mc Dougall defines a sentiment as "an enduring conative attitude towards some object induced by experience of that object". (*Outline of Psychology*, p. 429) Mc Dougall in his *Introduction to Social Psychology* (p. 106) says, "the words 'love' and 'hate' have been used to denote both emotions and sentiments. Tender emotion is an essential constituent of the system of emotional dispositions that constitute the sentiment of love. Similarly the word 'hate' is commonly applied to a complex emotion compounded of anger, fear and disgust as well as to the sentiment which comprises the disposition to these emotions as its most essential constituents. But 'love' and 'hate' are not merely emotions, but enduring tendencies to experience certain emotions whenever the loved or hated object comes to the mind. Thus as Shand points out, when a man has acquired the sentiment of love for a person or other object, he is apt to experience tender emotion in its presence, fear or anxiety when it is in danger, anger when it is threatened, sorrow when it is lost, joy when the object prospers, gratitude to him who does good to it and so on; and when he hates a person, he experiences fear or anger or both on his approach, joy when that other is injured, anger when he receives favours.

---

[6] Mc Dougall, W., Outline of Psychology, Chap. XVII.

Sentiments about objects and people become more generalised into sentiments about ideas and institutions, ways of life, nationality. Thus love of mother becomes respect for family, which may be generalised to a sentiment of national feeling. Smith[7] shows the structure of sentiments in a very clear way in his synopsis of Mc Dougall's system.

It is the business of the teachers and parents to build up sentiments compatible with good way of life.

The Concept of Personality

Personality has been defined in various ways. R. B. Cattell expresses it as that which enables us to predict a person's behaviour in a given situation. While a man's intelligence, his bodily strength and sklls are certainly part of his personality, yet the term refers chiefly to his emotional and social qualities, together with his drives, sentiments and interests.

From the interaction of the living organism with an environment that frustrates or encourages, and conditions its impulses the development of personality takes place. An organised structure of personality includes the conscious sentiments and interests, and the unconscious 'mechanisms' or complexes which determines the child's or adult's behaviour in any situation. This structure is fairly stable and thus produces consistency of behaviour towards similar situations from time to time. The same child may display very different characteristics at home, at play with his friends and in school classes under different teachers." We interpret it so diversely that experimental investigations rarely yield co-relations higher than 0.5 to 0.6 between assessment of person's traits by different acquaintances or observers" — Vernon[8]. Personality is not an adding together of all of a person's observed traits.

Personality Traits

Personality traits can be regarded as permanent clusters of

[7] Smith, F. V., The Explanation of Human Behaviour, pp. 128-129.
[8] Vernon, P. E., Personality Tests and Assessments, p. 4.

specific behaviour responses to limited and specific situations. We may talk of the trait of perseverance. If it is a permanent feature of a person's make up, perseverance will be shown in many specific situations — home work, gardening, hobbies and dealings with other people.

Scientific study and measurement of traits is extremely difficult for: (1) the traits are mostly vague and ambiguous in meaning (2) they involve subjective interpretation. They are partly dependent on the observer. His own personality and viewpoints both influence what he notices in other people's behaviour, and his interpretations of the traits responsible for such behaviour[9] and (3) the artificiality of studying personality in isolation from society.

Persons are rated for various personal, emotional and temperamental qualities. The ratings are then correlated and the groupings or clusters of allied traits discovered by factor analysis.

The subject's response to questionnaires are correlated and analysed by factorial methods. The ratings by experts or the subjects' own responses to questionnaire items are not as reliable as the best objective test results. The factors of personality or temperament for this reason cannot be accepted with the same confidence as the factors of ability. As in the case of the analysis of ability, the factor analysis of personality traits begin with certain hypothesis about the structure of emotions and the classes of temperamental response. Mc Dougall's structure of emotions has become the starting point and the hypothesis for explaining the results of factor analysis.

"On the conative side these innate tendencies are analogous to the innate 'ability' on the cognitive. They are not to be thought of as well defined and separated entities which can be corrected once for all and catalogued in a definitive list, but rather as analogous to so-called group factors". Some appear to be exceedingly general or complex others relatively simple or specific"[10].

---

[9] Vernon, P. E., "The Bisocial Nature of the Personality Trait", *Psychological, Rev.* 1933, 40, pp. 533-548.

Of all the theories of personality, the theory advanced by Jung has an important influence upon the psychologists trying to make an empirical study of personality. According to Jung human beings can be divided into two primary types according to their attitude to life. These types are known as the extraverts and the introverts. The extravert personalities are interested in the outside world. The extravert type may include the traits of cheerfulness, shallowness, self-assurance etc., while the introvert includes reticence, lack of self-confidence, accuracy etc. The introvert views the world subjectively. But people do not always fall nearly into either of these two classes or compartments and so Jung defined a third class of individuals as the *ambiverts* possessing some of the qualities of both extraverts and introverts.

Extraversion-introversion indicates polarity of attitude to the world. Jung says that people function in four different ways in accordance with the type to which they belong. For example :

	Extravert	Introvert
Thinking	Practical Scientists	Philosophers, Metaphysicians
Feeling	Kindly person who must feel to do a thing	Schizoid
Sensation	Cheerful person	Artists
Intuition	Salesman, Politician	Mystic

Regarding the factorial theories of personality and temperament, Burt has given us one of the earliest.

On analysis of the emotional qualities of normal children, he advances his theory that there is first a general factor of emotionality, then a bipolar factor distinguishing extravert from introvert emotions i.e. assertiveness, sociability, curiosity, anger from submissiveness, tenderness, fear, sorrow etc. He speaks of a further bipolar factor distinguishing pleasurable from unpleasurable emotions.

---

[10] Burt C., "Is the Doctrine of Instincts Dead?" *British Journal of Educational Psychology*, XI, Pt. III, p. 144, 1941, and XIII; Pt. 1; 1943.

The American psychologists have tended to look for unitary traits of personality. Cattell has put forward a list of a dozen primary factors or "source-traits". They include: cyclothymia v. schizothymia; general mental capacity; dominance v. submissiveness; surgency v. melancholy; character integration v. dependent character; neurasthenia v. vigorous character; cultured mind v. boorishness.

These source traits are not necessarily independent. Cattell formulates these traits in a population of women students. Banks, however, re-analysed the data following Burt's method and obtained a hierarchical picture of the trait structure. These interpretations in terms of primary traits (Cattell's) or hierarchical traits are outcome of empirical studies.

Another American investigator, Guilford postulates thirteen factors not all independent. They include — social introversion, depression, cycloid tendency, rhathymia, ascendance, submission, masculinity, feminity. Motser also analysed responses to items on questionnaires and mentioned eight primary traits; cycloid tendency, depression, hypersensibility, inferiority, social introversion, public self-consciousness, feeling of intellectual inferiority, tendency to day-dream.

When we study the approaches of the American and the British psychologists in regard to the factorial analysis of personality traits, we find that introversion v. extraversion shows up in some form or other. The general emotionality of Burt is not found by other workers.

Eysenek finds a general factor of neuroticism among abnormal patients which is not the reverse side of general emotionality but that of integrated personality — it was based on the contrast between normals and neurotic patients.

Physical signs and personality

There is a tendency to classify individuals according to body build and the accompanying temperamental make-up. It was held that temperamentally there were four kinds of men, the sanguine, melancholic, choleric and phlegmatic according to whether they possessed excess of blood, black bile, yellow bile or phlegm. Modern physiology mentions powerful and exact endocrine secretions. The rate of secretion and interbalances between the thyroid, adrenal, pituitary and gonad glands account for many of the psychological qualities of the individuals.

Another approach to the problem of physique and temperament is found in the work of Kretschmer. He has placed individuals into four physical groups: Pyknic, athletic, leptosome or asthenic and dysplastic (those who possess some or most of the qualities of first three groups). The Pyknic type is short, fat and paunchy, the athletic is deep chested, broad shouldered, muscular and large-boned and the leptosomatic is tall, thin, narrow-chested, long and lanky limbed. They are correlated with two basic emotional types — the schizophrenic and the cyclic or manic-depressive.

In extremes, he found that a majority of Schizophernic patients were asthenic or leptsome and athletic (intermediate) build, whereas a majority of cycloid or manic-depressive patients were of pyknic physiques. He extended this generalisation to normal persons claiming that asthenics tend to be schizothyme or quiet, sensitive, reserved in temperament, whereas Pyknics are cyclothyme or emotionally liable, genial and sociable. He also classified historical figures by body build, stating that they show distinctive philosopies or interests. For example, realists, humorists, and materialistic scientists tend to be Pyknic, while romanitics, idealist philosophers and metaphysicians tend to be asthenics.

Kretschemer's type theory cannot be accepted completely on the ground that people do not fall into clearly defined types, physically or temperamentally. Indeed it is for this reason that Kretschemer has the fourth class of physique — the dysplastic — possessing a mixture of qualities. Most of us have a little of all the properties. We can find schizoid characteristics in the most cyclothymic person. Moreover, the apparent correlation between physique and temperament is mainly due to a third variable age. We get fatter as we get older and the young person's mental disease is schizophrenia, whilst the old man's is manic-depression. When age is 'partialled out', the correlation between body build and temperament is much less.

In recent year, three-fold classification of body and temperament has been put forward by Sheldon. It is based on the relative development of three bodily components: endomorphy (roundness, softness); mesomorphy (hardness, muscularity) and ectomorphy (delicate, linear physique with weak development of both visceral and somatic structures).

An individual is photographed from standard position. From measurements of the pictures, he is assigned a three-fold rating on a 1 to 7 scale, indicating his standing on each component. Sheldon's temperamental classification, which is claimed to correspond closely to the physical is based on thorough clinical interviewing and observation. By means of rating on 50 traits the relative prominence of viscerotonia (sociability, relaxation, love of comfort), somatotonia (vigorous, assertive, lover of muscular activity), and cerebrotonia (reserved, fond of privacy and mental activity) is determined. These three components are each made up of twenty traits rated on a seven point scale. Each student was characterised by two three-fold indices one for the three components of physique (endo, meso and ecto-morphy) and the other for the three temperamental components (viscero, somato and cerebrotonia). Sheldon[11] correlated the results of 200 students and clams to have found the following correlation co-efficients between individual components of physique and temperament.

Endomorphy and viscerotonia	0.79
Mesomorphy and somatotonia	0.82
Ectomorphy and cerebrotomia	0.83

But later work suggests that the connection between his physical types and personality traits amounts to the usual figure of around 0.2 to 0.3.

Burt was the first to use factorial methods in order to investigate the relationship between physical build and temperament. When the physical and temperamental measures were considered together, Burt obtained a slight evidence of correlations between stoutness and cheerful qualities and between thinness and inhibited and repressed qualities.

---

[11] Child, L. L., "The relation of Somato type to self-ratings on Sheldon's Temperamental Traits"—*J. Person*, 1950, 18, pp. 440-453.

The optimistic views of Kretschmer and Sheldon are not confirmed by factorial researches. There is undoubtedly an association between body build and temperament types, but it is not very significant. As Anastasi and Foley[12] put it 'the long-lean' tended to be more inhibited and repressed and more prone to schizophrenia and allied disorders; the more 'rotund' individual inclined more towards cheerful, sociable reactions and towards cyclical forms of insanity. But again it should be repeated that these relationships were so slight as to be of theoretical interest only".

Psychosomatic and Endocrinological Relationship

Adler pointed out that many persons suffering from an organic defect, strove to compensate for this deficiency and even developed special talent in the very field of their weakness. Another physical fact to which much importance was attached by Adler was order of birth. The order of birth in a family (the oldest or the youngest) affects personality development in various ways, but Jones[13] survey in the field shows that no safe generalisations are possible.

There is some connection between left-handedness and personality. Burt[14] gives an excellent discussion of the complex nature and origins of handedness. Certain sensory deficiencies are often the product of neurotic, rather than of purely physiological conditions. Similarly Slater[15] obtained poor visual acquity more frequently among neurotic patients than among normals.

The notion that bodily chemistry underlines temperament is very old. The four classical types of temperament — sanguine, choleric, melancholic and phlegmatic were attributed to the relative prominence of four bodily fluids — blood, yellow bile, black bile and phlegm. Berman describes a pituitary, a thyroid and other types of personality in whom these glands are said to be dominant. He attributes criminality and insanity largely to glandular disorder. It is certainly not true to regard each hormone as responsible for some particular set of traits. It is far too simple to regard, for example, the sex glands as determining masculine and feminine temperamental characteristics. The psychologists recognize that the sex differences and adolescent traits vary widely in different societies and are culturally determined. They are matters of personality and not of temperament.

---

[12] Anastasi, A., and Foley, J. P., Differential Psychology, p. 452.

[13] Jones, H. E., "Order of birth in relation to the development of the child", Handbook of Child Psychology, 1931.

[14] Burt, C., The Backward Child, 1937.

[15] Slater E., and Slater P., "A Heuristic Theory of Neurosis". *J. Neurol,* 1944, 7, pp. 49-55.

Development of Emotions

We have seen that Mc Dougall speaks of complex emotions and sentiments. Complex emotion is the fusion of joint operation of two or more simple and primary emotions. The most powerful influence in emotional development is that of the sentiments. Sentiment is an enduring attitude towards some important part of the individuals' experience. When the individual perceives the object of his sentiment in different circumstances, his emotions are built up around the object. Mc Dougall's explanation of the development of emotions does not depend upon the differentiations of emotions but on the fusion of primary emotions and lastly on the integration of emotions about objects (of sentiment) developed during the course of experience.

A different approach to emotional development has been suggested by Allport[16]. According to Allport the innate hormic instinct's are nothing but organic drives. It is in order to reduce the tension caused by these drives that an individual acts. But as an individual grows into adulthood these primitive drives recede and become supplanted by goal-oriented motives. These motives are known as interests, attitudes, values, ambitions, tastes and sentiments.

Adult motives are varied and constantly changing. To make it clear, the following example may be given: "A person may take up painting as a hobby. At first it may be due to an urge to copy or to scribble. Then the painter discovers that the has ability; he takes joy in painting 'for its own sake'. Later he may join with other painters, he paints now with half an eye on impressing them or making a good show at an exhibition He may have work refused, may see accepted work in a different style from his own; he now endeavours to conform or he may return to earlier personal satisfaction. At each period in his development the emotions aroused by success or failure are different; the drives are autonomous, although on the surface the activity is the same — painting".

---

[16] Allport, G., Personality: A psychological interpretation.

Both Mc Dougall and Allport depend on experience and learning as causes of emotional development. But Mc Dougall's explanation would lead us to more integrated emotional patterns. whereas that of Allport to more changeable patterns. According to Allport human motives and purposes are too diverse to explain in terms of a few primal drives. Pear writes: "It is necessary to allow for the learning of new motives and the acquisition of novel interests as the personality matures. When people seek the same goals, the fact may be explained by assuming that similarly constructed individuals living in similar environment, influenced by similar culture, would develop similar goals and employ similar needs of obtaining them".

Burt[17] who was an active supporter of Mc Dougall's views writes: "In man the modifications and elaborations of these instinctive tendencies, produced by personal experience, are more various, more numerous, and more far-reaching than in any other animal. Hence in the older child as compared with the less intelligent or the more unstable, and possibly in members of more civilised nations or more cultured families as compared with members of primitive races or families living under primitive conditions, the motives and the interests acquired by the individual dominate more and more over the innate impulses, which are common to all. Thus, at one end of the range, we may find individuals living their lives on a semi-instinctive plane, at the other individuals whose conduct at the adult stage is, to all outward seeming, almost devoid of instinctive characteristics.

---

[17] Burt, C., "Is the Doctrine of Instincts Dead? — Conclusion", *British Journal of Educational Psychology*, XII Pt. 1, 1942.

It follows that, in studying young children, or older persons who have partly regressed, or perhaps never risen above the simple infantile level, the assessment of the strength of these instinctive tendencies is an essential task for the psychological observer. In studying the more normal adult the assessment of acquired interests, motives, and ideals may be far more important; here, indeed, lies a field of research which, as is generally conceded, has been sadly neglected hitherto. In every person and particularly in the intelligent adult, the way these innate and other tendencies have been progressively differentiated and organised is unique. Hence, each individual personality must be studied in and for itself".

Vernon[18] who supports Allport's theory writes: "The behaviour of the young infant is of course primarily governed by his innate neural structures and their degree of maturation, and by chemical conditions. But from the very start there is so much interaction between instinctive tendencies and environmental influences that it is practically impossible to designate any particular type of behaviour or drive, even in the two-year-old as innately determined. I would emphasise as strongly as any psychologist the importance to the teacher, parent or clinician of a knowledge of a child's main drives. Moreover, as already indicated, I accept the view that many such drives are so widespread, in varying strengths, among almost all children (in our own particular civilisation), that they can usually be classified and assessed in quantitative terms. But I would much prefer to regard such drives as interests, attitudes, sentiments and complexes which may differ greatly in different cultures, which could readily be altered by changed methods of up-bringing in early years, and which are still susceptible to modification during later childhood, adolescence and even adulthood, by skilful psychological treatment".

---

[18] Vernon, P.E., "Some Objections to the Theory of Human Instincts", *British Journal of Educational Psychology*, XII. Part 1, 1942.

The teacher's function in the development of the emotions is very important. If the instincts are considered to be relatively fixed (Mc Dougall's view) the teacher's duty will be to canalise them, to impart education suited to them and find a socially acceptable substitute activity. If on the other hand 'human purposes and motives are too diverse to explain in terms of a few primal drives' (Allport's view) the teachers would emphasise new learned interests and supplant the more primitive drives.

This fixed nature of instincts implies the limits of educability. Fleming[19] observes "such consistency, fixity and independence of environment do not however, on closer inspection, characterise the behaviour of children in most families and most schools. Human beings do not always remain in the categories in which they are placed; and clinical psychologists have had to admit that the same individual may in one set of relationships appear as aggressive and in another as submissive -- in one situation, he may be an introvert and in another an extravert...... It has had to be acknowledged that human instincts are "pliant and uncertain tendencies, seeds that may never spring up, and that neither delinquency nor neurosis is due exclusively to inborn constitution nor yet to shocks and maladjustments in the remote past, but may spring largely out of contemporaneous conditions and conflicts". The teacher, the parent and the psychologist, in so far as they observe life as a whole have to pass from a study of individuals seen one by one at any given time to an awareness of individual behaviour as it appears in the shifting groups, and changing social relationships which characterise a school, a home or a community".

Instincts or Needs

We are now to discuss briefly the theory of human needs suggested by Thomas and supported by Fleming. . What are the human needs? On the physical plane they are probably food, warmth, shelter etc; on the psychological plane various answers have been given and it is significant that their clearest expression has come from clinicians concerned with the treatment of delinquent youths or problem children. Delinquency was described by Thomas[20] not as a consequence of perverted personal characteristics — physical or psychological — but as an absence of adjustment by the individual to the demands of society and as a sequel to the failure of society to satisfy the basic needs or 'wishes' of the individual.

---

[19] Fleming, C. M., The Social Psychology of Education, Chap. III, pp. 12-13.

Those wishes were formulated as:

(1) the desire for new experience; (2) the desire for security, (3) the desire for response; (4) the desire for recognition.

The child is a member of a family, group, class, school and his needs are to be fulfilled by the group of which he is a member. He needs to be accepted by the group to feel secure in his membership. He needs recognition of status. He claims responsibility and lastly he needs scope for new experience and adventure. The fulfilment of needs has a great influence upon the emotional development of children. If a child is deprived of security, as is seen in unwanted children, then when he reaches maturity, he may fail to develop his personal responsibilities. What goes on in early childhood has a marked influence on later morale. This idea is supported by Bowlby[21] who has carried out intensive work on the effects of early separation of child and mother. Thwarting of the need to give and to receive affection in the first few months of life has been found to be associated with delinquent behaviour at later stages; and awareness of lack has been noticed to transform apparently normal children into unhappy and over-anxious neurotics[22].

A sense of security seems to be strengthened by experiences of orderly living — "that life be lived in a reasonably stable environment where physical needs are met with sufficient regularity and where budding confidence is not stifled by capricious cruelties, inconsistencies and tyrannies". At home there should be accommodation for children's possessions, some responsibility undertaken by the children for common welfare, an atmosphere of courtesy and consideration and parents emotionally mature and consistent in their way of life. The school also should offer the same opportunities; teachers should be socially and emotionally mature; the active participation of the pupils should be encouraged; learning should be presented as an adventure; there should be opportunity for the child to contribute to corporate life of the school.

---

[20] Thomas, W.I., "The Unadjusted Girl", 1920.

[21] Bowlby, J., Maternal Care and Mental Health (W.H.O.) Geneva, mon. 2, 1951).

[22] Vernon, P. E., "The Psychological Effects of Air Raids", *Journal of Abnormal and Social Psychology*, XXXVI, 1941, pp. 457-76.

The Processes of Adjustment

There is another problem — the problem of adjustment in the matter of emotional development. When the instinctive responses are in conflict with the persons' self-regarding sentiment and with social and cultured mores, the person takes recourse to certain substitute activities. The Freudian theory depends more on substitute activity. According to Freud there are only two primitive drives — the urge to create and the urge to destroy. These drives are referred to as sex' and 'aggression' by Freud. Freud believes that all emotional activity can be reduced to these two drives and civilisation is the product of the blocking of these in their primitive form. Blocking or 'repression' leads to frustration. Blocking or repression leads to frustration to some extent, but frustration does not always lead to substitute activity. Blockage may give rise to intensification of the effort to achieve the goal or to re-orientate the perception of the problem — the latter is learning by insight.

Substitute activities are not always harmful. They may be beneficial. Lewin speaks of two characteristics of substitute activity. A boy failing in his school work may take to aggressive behaviour, bullying other children, but this will not give him as much satisfaction as he will get in achieving something in games, in hobbies. The real activity gives better satisfaction and it is a better substitute than fantastic substitution such as day-dreaming.

There are various adjustment mechanisms typically used by persons when they are thwarted in reaching their goal. They are: aggression, compensation, sublimation, identification, rationalisation, projection, repression, reaction formation, egocentricism, negativism, withdrawal, regression etc.

Aggression

Aggression is a typical reaction to frustration. It is held by Dollard *et al*[23] that aggressive impulses are set in motion by frustration. The individual however does not always show aggression but restrains. Karen Horney says that repression of all hostile and aggressive feelings is bad from a mental hygiene viewpoint. The repression of such feelings may lead to anxiety and neurosis.

The maladaptive substitutes in social aggression are lynching, finding scapegoats and persecution of minorities. Beneficial substitutes would like recourse to attack of new problems in other fields — social, intellectual or manual.

Compensation

Compensation is another form of substitution. Here attainable goals are substituted for non-attainable goals or goals difficult to attain. The person here attempts to succeed in the very line where he is handicapped. Compensation is a mechanism which grows out of a feeling of inferiority. The person who is relatively secure does not engage in compensatory activities. Compensation is a useful means of adjustment. It reduces tensions and anxiety feelings and promotes a good mental health.

Sublimation

It is a special form of compensation. The Fredians used this term to mean substitution of a socially accepted non-sexual goal for a goal which is sexual in nature. The individual who was sexually thwarted might resolve his frustration by developing interests in art, sports, scientific research, social service etc. Recently the term has been used in a broader sense. Cameron and Margaret[24] defined sublimation as "the substitution of socially approved reactions, particularly if they have an altruistic flavour, for socially discredited or taboo behaviour".

---

[23] John Dollard, N. E., Miller, L. W. Doob and R. R. Sears, Frustration and Aggression, New Haven, Yale University Press, 1939.

[24] Cameron, Norman, and Ann Margaret, "Behaviour Pothology", 1951, pp. 377-78.

Rationalisation

It is another form of substitute activity. It is 'explaining away' a failure in 'sour grapes'. It is difficult for one to admit that he has failed to reach the cherished goal. This situation of inability in reaching the goal or behaving below expected level makes the individual frustrated and he takes recourse to rationalisation. Rationalisation has been defined as a "mechanism by which the individual justifies his beliefs or action by giving reasons other than those which activated or motivated him."[25] By this defense mechanism the individual is able to excuse his shortcomings. The pupil who fails in his school work may insist that his teachers are unfair or that a recent illness was the basis of difficulty.

Projection

It is a special form of rationalisation. By it we tend to project the blame, guilt or responsibility for our misdemeanours onto others. The individual judges others by himself. The dishonest person assumes that everyone else is dishonest.

In projection, an individual blames other people or inanimate objects for his own failures. "Projection is an age-old method of shifting responsibility and passing the buck which goes back to the garden of Eden when Adam blamed Eve for his own deficiencies". This form of rationalisation is very common in children. "It was the pen that did it".

Another form of substitute activity is thinking fantasy or day-dreaming. On many occasions we dream of 'getting our own back' of doing something heroic or of saving somebody's life. It is seen in wish fulfilment. It relieves tension for a time, but if indulged in frequently slows down active life.

Identification

It is a mechanism by which an individual satisfies his needs by allying himself emotionally with or feeling himself one with another person. The film goer identifies herself with the filmstar.

Individuals want to be important and when they fail to achieve distinction in their own right, they identify with some one who is famous. It is often found that a non-athletic youth is walking in arm with a successful athlete.

---

[25] Thrope P. Louis, The Psychology of Mental Health, New York, The Ronald Press Co., 1950, p. 724.

Regression

A child may fail and this failure brings interesting changes in emotional response. He may take recourse to some substitute activity or he may run away from the situation. The earliest way out is to withdraw.

Regression is form of withdrawal. It is a mechanism by which an individual comes down to a less mature level of development or adjustment in order to keep his personal integrity. Regression is not peculiar to childhood. It is very often found in adults. An adult unable to solve his problem may resort to childish or adolescent tactics in an effort to get what he wants. He regresses and becomes infantile.

The youngster who fails in school may become tearful and truant and may develop childish habits like nail biting, bed-wetting and speech mannerisms. He wants security and protection of mother. Many forms of regression become maladaptive and lead to delinquency and retarded educational growth.

The child guidance service should aim at detecting the causes of these conditions and try to remedy them.

Changes in Emotional Responses

We are now to discuss whether with the advancement of age, the emotions differentiate. Burt holds that there is a general factor of emotionality and there are group factors distinguishing between pleasurable and unpleasurable emotions and extravert and introvert types. He speaks of more specialised emotions identifying them with the instinctive emotions.

Burt suggests that emotions change as a person grows older. In the earliest days of life an infant's emotional reactions are extremely broad and due to experience and maturation these broad emotional responses become differentiated. A lot of research[26] in this field has been made and it has been held that the emotional life of a child is very simple and it becomes more and more diversified in course of time. Watson[27] finds three basic emotional reactions in children and they are fear, rage (anger) and affection. Fear is aroused by loud sound, sudden loss of support; rage by restricted movements and affection by gentle patting, softness and warmth. Fear is expressed by trembling, crying, whimpering, etc. Rage is characterised by screaming and by slashing movements of hands and feet and affection by smiling and expressions of comfort. But other researches suggest that the emotional responses of very young children are not so differentiated as suggested by Watson. Emotions at this stage are global.

---

[26] Jersild, A.T., "Emotional Development" Chap. 15, Manual of Child Psychology.

"The wail of the very young infant has but little variety... ......though mothers claim to be able to distinguish the cries of fear, of anger and of bodily discomfort at a very early age and it is probable the these three modes of action become gradually differentiated"[28].

Sherman did find no clear-cut differences between the displeasure responses of infants. The responses of the children to (a) delay in feeding (b) sudden loss of support (c) restraint of head movements (d) being pricked with a needle, were filmed.

The filmed response but not the stimuli was shown to expert adults and they failed to detect clear-cut differences in response. But responses of fear, anger, astonishment and satisfaction at ten months have been identified. Gessel could recognise differences in cries for hunger, pain and discomfort even at one month of age. At three months, the child expresses his pleasure and delight through smiling. Buhler also holds the same view. This differentiation goes on during childhood and adolescence.

Development of Emotions

"The younger the child the more his emotions tend to be aroused by tangible events that impinge directly on him. As he becomes older, he becomes increasingly responsive to signs and symbols that betoken furtherance or hindrance of his welfare and wishes". The young infant's appetite demands food for its alleviation but later the presence of the parent will be suffi-

---

[27] Watson, J. B., Psychology from the Standpoint of Behaviourist, 1919.
[28] McDougall, Social Psychology, Page 44.

cient. The child's 'emotions become associated with an enlarging repertoire of activities, plans and interests". Emotional development depends largely on learning. Children copy their parents or intimates in situations of life. When they find their parents anxious in a situation, they are also afraid. Gradually, the child's powers of perception, motor activity and cognition, and maturity influence the development of emotions.

Expression of Emotions

When we are young, our emotions find obvert, explosive and immediate expression but as we grow older, the explosive, direct modes of childish behaviour are replaced by more subtle, delayed and indirect reactions. The response takes the form of verbal abuse or long-term planning to get the revenge. In adulthood physical violence is seldom found. This does not mean that the emotion is any the less felt. In controlled anger or fear, we experience internal changes such as increased heartbeat and hormone stimulation in consequence of the arousal of these emotions. In adulthood we cry less and our energy is saved and directed towards the problem situation.

Adolescence

We will now consider how in childhood, adolescence and in adult age, the three emotions like anger, fear and affection develop. We will be wrong, however, to suppose a division between childhood, adolescence and adulthood. In an individual's emotional development we have a continuous and gradual change.

Fleming[29] points out that "adolescence is not confined to any particular age. The word adolescent is not a mere equivalent of puberal. Puberty among quite normal children has been reported to occur at all ages between eight or nine and eighteen or nineteen. The word adolescent carries with it social as well as physiological implications. It refers not merely to the years of physiological maturing but to the period of social and personal development, which is commonly (though not always) contemporaneous with that time of physical change". Some people continue having emotional qualities of childhood and adolescence through their lives.

[29] Fleming, C. M., Adolescence, Chap. I, p. 2.

Anger in childhood is aroused by physical restriction and coercion. This annoyance or outburst of anger, however, rarely outlives the immediate cause. Later he (child) quarrels over toys and anger is expressed through physical violence like kicking, hitting and crying. They are also short-lived unless they are supported by adults and older children. Expression of anger takes the verbal form.

Fear in young infant is roused by sudden noises and movements, loss of support. Fears of the dark and of strange people also may develop in the first few years of childhood. Fear is socialised at this age, e.g. an over-dependent child fears separation from parents.

Affection in a little child is expressed when the child's immediate physical needs are fulfilled and it is limited to those who satisfy the child's needs. It is first attached to the mother, then to the father and finally to the family. At the end of childhood, affection is extended to friends outside the family.

The need for security is uppermost in the early period of childhood and it can be seen that the child depends much on the mother and he demands many things from the family. Generally speaking in childhood the emotional responses are characterised by explosive, immediate action and changes of emotions are sudden in response to the fulfilment of needs. There is strong dependence on parents, on acceptance of security, protection and privilege. The child is essentially self-engrossed though the feelings of 'give and take' begin.

In adolescence, physical frustration no doubt causes anger but expressions are not so explosive. The young is very much sensitive to any attack on his prestige. He may react angrily also against the restrictions of parents and family. In an enquiry[30] four hundred and fifty twelve-year-old children were asked to write a list of items in their parents' behaviour which they found annoying. Some complained of ill-temper, nagging, moodiness and irritability. Others objected to being treated as infants and prevented from joining in games and activities with other boys and girls. Others protested against patronage in the presence of outsiders and personal comments before visitors.

---

[30] Zeligs, R., Glimpses into Child Life—New York, William Morrow and Company, 1942.

All these comments, as Dr. Fleming[31] points out "were in some fashion symptomatic of a longing on the part of the adolescents for the satisfaction of the basic human needs combined with a willingness to mature and a desire to be accepted as grown-up persons. They wished to be recognised as responsible and valued members of the family group".

Verbal expression becomes the chief means of giving vent to the emotion of anger. Substitution in the form of fantasy takes place and we get the familiar day-dreaming.

Characteristic adolescent fears have as their stimuli unfamiliar social situations. The adolescent dreads failure. His responses are less obviously physical than those of the little child; but he may be tongue-tied or paralysed with terror or he may resort to elaborate planning to escape from social commitments and relationships which to him are unaccustomed and therefore terrifying.

In adolescence, intellectual capacity also develops very rapidly. Fears of an adolescent are also generalised into such fields as religion and philosophy — fears of moral unworthiness are shown. The adolescent is in two worlds : he is dependent to a large extent upon his parents and at the same time he considers himself as an independent social unit — so he is embarrassed in the presence of adults. His awakened sex feelings also lead him to an embarrassed situation in presence of the members of the opposite sex.

Affection in the form of group loyalties develops in adolescence. Adolescence has sometimes been described as a period of 'crushes' for members of the same or opposite sex, and a time for group or gang life. There is of course the development of affection for opposite sex but the form it takes is dependent on the social expectations of home and school.

The need for security is of primary importance in childhood. In adolescence, the need for recognition and for responsibility is more important. An adolescent wants that society should recognise his status. Peel observes: "The adolescent is beset by problems of divided loyalties, accentuated by the lack of adult privileges and responsibilities. He thus appears excessively aggressive and then excessively shy, excessively affectionate and then quite suddenly detached and cool". It cannot be denied that there are individual differences due to the culture in which the adolescent lives.

---

[31] Fleming, C. M., Adolescence, p. 73.

Adulthood

In adulthood, emotions are less observed and they are aroused by a wide range of events having no direct bearing upon the adult's personal life. Anger is aroused by wrongs done to others. He does not express his emotion by physical violence but he will show it in a much more subtle way. He is capable of organising his activities to counteract such attacks.

The adult escapes both from irrational fears and from the dread of social misadventures. He no longer thinks there is a snake behind the curtain or an ogre in the darkness. He knows that he is strong enough to lift the curtain. There remains, however, the fear of certain real dangers whose nature varies. He may dread swift traffic, unemployment, the failure of harvest etc. Responses to fear are less immediate and more intellectualised. They take the form of deliberate planning.

An adult's affections are attached to his own family, to friends and colleagues. His loyalty becomes generalised from personal local groups to clubs and lead to patriotism and even self-sacrifice in the interests of larger units. This takes the form of widening social contacts beyond the units of the household; and shows itself as concern for the welfare of the district, the community, the nation or the world. "It is no accident that the happily married, after absorbed attention to the needs of their own children in their twenties (or early thirties) turn again to outside interests such as politics, club-membership, or religious organisation in the late thirties or forties"[32]. The personal maturity of adult mental health is accompanied by an experience of inner confidence and security symbolised by a self-forgetfulness which permits either joy or sorrow to be met without undue distress. Such adult independence is rooted in the fuller understanding which comes from a philosophy of life or awareness of religious experience.

---

[32] Fleming, Social Psychology of Education, p. 77.

CHAPTER IX

Personality

Children differ in ability, attainment, emotions, interests, temperament, sentiments and attitudes. These qualities are organised in an individual to constitute his personality. Burt defines personality as "a unified pattern of bodily and mental reactions exhibited by the self in response to a social situation". Allport[1] defines it as "the dynamic organisation within the individual of those psychological systems that determine his unique adjustments to his environment". Sherif and Cantrill[2] make personality equivalent with the hierarchy of social attitudes and sentiments possessed by an individual. A human being having developed his social attitudes in contact with society becomes a person. Allport, however, considers that we are persons first and members of society afterwards. Munn[3] in his book on elementary psychology describes personality as "the most characteristic integration of an individual's structures, modes of behaviour, interests, attitudes, capacities, abilities and aptitudes".

It is clear from the above definitions that personality of a human being implies integration of his thoughts, actions and feelings. We assess personality of a man from what he thinks, feels and acts. In order to measure personality a person's expressive activity and his attitude to values are important.

The qualifications, a mature personality possesses may be broadly categorised under four broad heads, viz: (1) self-extension (2) self-objectification (3) self-feeling, and (4) self-consistency.

---

[1] Allport, G. W., Personality: A Psychological Interpretation.

[2] Sherif and Cantrill, the Psychology of Ego-involvement.

[3] Munn, N. L., Psychology.

A mature person is capable of extending his activities in many fields. He is capable of looking at himself objectively. He has some insight into his own powers and weaknesses. Self-feeling means self-confidence. A mature person believes in himself and he feels that he has power and dignity to stand in the face of opposition. There is consistency in a mature person's actions, beliefs and thoughts — he leads a consistent way of life. A personality means harmonious integration of all these qualities grouped under four heads and each by itself is inadequate and would lead to a very unbalanced individual.

A merely self-extended person is found to be busy and sincere but he would fail to notice whether he was ridiculous or being imposed upon. His energy is likely to be dissipated in various outward activities. An extremely self-objective person may become negative, indolent and cynical. The person with excessive self-feeling again may be selfish and in extreme cases may develop paranoid tendencies such as revealed in some dictators.

Lastly, an extremely self-consistent person whose life is dominated by a single purpose may become a bigot, a difficult person to live with.

Self-extension

Self-extension is opposed to egocentricity and selfishness. It is not always necessary that self-extension should imply extraversion. Introverts may also be self-extended. Allport says "whenever a definite objective orientation has been attained, the pleasures and pains of the moment, setbacks and defeats, and the impulse for self-justification fade into the background"[4].

Self-extension enables a person facing great obstacles in life. He is capable of great resilience in the face of obstacles. Having his self-extended in diverse directions when a person meets resistance in one direction; he does not come to a full stop — his life is not ended there.

Self-objectification

The power to see ourselves face to face is self-objectification. We can see within ourselves and come to know our strong and weak points. We learn to laugh at ourselves and to develop a sense of humour. We tend to by-pass the things which really matter to us. Is it not difficult, unless we have self-objectification, to laugh off a blow to our prestige?

---

[4] Allport, *Op Cit*, p. 213.

Self-feeling

A mature person feels the existence of self in him and maintains the integrated entity of his self. He realises that he has his own place in and contribution to society. He is aware of his own personal responsibility for what he is and for what he does. A sense of dignity and self-esteem is a *sine qua non* for success in life. In the absence of self-feeling, a person becomes an object of pity and the ideal for which he stands is destroyed.

Self-consistency

Allport speaks of the value of religion and humour in determining the frame of reference in one's life. Frames of reference are formed and integration and consistency of personality develops. Following Spranger, Allport gives a list of six other systems of evaluation which may make for consistency of an individual's actions. They are:

Theoretical values — discovery of truth
Aesthetic values — form, grace, harmony, fitness
Social values — love of people, persons as ends
Economic values — useful, practical
Political values — power and influence
Hedonist values — pleasure, sensory experience

Each of us has a standard of life and that is compounded in some way of these values. Values are difficult to study scientifically, because no two persons have exactly the same organisation of attitudes. Studies have been made, however, which suggest quite clearly that some people react to a wide variety of situations in terms of a central religious value (Allport and Vernon, 1931). Six types of values thus have been formulated. The intent of these and other studies of values, incidentally, is not to establish what values people should hold but only to discover what inclusive attitudes are in fact organised around central values.

Although each person's organisation of attitudes is in some degree unique, we must not forget that within societies, and within groups in society most values are widely shared.

The Assessment of Personality

In our social existence, we assess persons whom we meet. We assess our neighbours, our employers, pupils, colleagues as honest, polite, ambitious and reliable etc. These are personal qualities, aspects of personality which we expect to find in them in different situations of life. The empirical judgments which we make are often hasty, incomplete and subjective. They often reflect our own moods and prejudices.

The psychologists also start with the same material but they try to refine their impressions by standardising the techniques.

Burt[5] outlines three main groups of controlled methods for the assessment of personality.

(i) Interviews, by which the person is rated, graded and ranked on the basis of the impression of the interviewers. (ii) Tests, and (iii) observation of the person in standardised natural situation.

Vernon gives a comprehensive account of the chief methods of tests and assessments. He discusses; interviews; makes impressions and measurements of physical signs and expressive movements: performance and cognitive tests: miniature and real life situation tests; personality ratings (of traits); self-rating and personality questionnaires: measurement of attitudes, interests and value judgments and projection technique.

The Interview

The interview method is generally used for the assessment of personality for educational or vocational purposes and for the diagnosis of maladjusted children and mental patients. An interview is the most comprehensive method as it makes use of all the other techniques of assessment and it is this 'multifariousness' which makes its results so uncertain. The interview makes use of observation and rating as techniques and it has resemblance with questionnaire in many respects.

---

[5] Burt, C. L., "The Assessment of Personality", *British Journal of Educational Psychology*, Vol. XV, 1945.

There are mainly three types of interviews as has been discussed by Symond.[6] The diagnostic type of interview seeks to discover facts concerning the life history of the informant and to extract from 'his' narrative his opinions, attitudes and personal experiences.

In the diagnostic interview interest is concentrated on the individual being interviewed. In the research type of interview, interest does not lie on in the person being interviewed except that he can contribute data which will help to solve a particular problem. The third type of interview includes treatment — the social worker is interested not only in obtaining facts regarding the person, but persuades him to change his family situation or make other adjustments.

The interview has often been contrasted with questionnaire. Charters says: "In all cases, the oral questionnaire is preferable to the written form. This means that when the teacher becomes an interviewer and asks the questions orally, he will obtain more reliable answers. He can clear up misconceptions of his meaning and can supplement his questions by others which will elicit more definite answers. The chief objection to the oral questionnaire is the labour required of the interviewer".

Meltzer claims that the interview yields more meaningful and revealing responses than other methods of enquiry. The responses in interview are more natural, less artificial, more informal and more spontaneous. The interview permits the examiner not only to collect facts, opinions, attitudes, likes and dislikes, but to find out the 'why' of these responses.

Reliability and Validity of Interview

We cannot accept any assessment of personality as valid unless it is reliable. We, however, accept lower co-efficients of reliability in the field of personality than in that of ability.

The correlations found by Clark[7] estimate of students' ability and their actual marks (0.66 and + 0.73) indicate that interviewing possesses some value.

---

[6] Symond, *Diagnosing Personality and Conduct*, 1931.

[7] Clark, Value of Student Interviews. *Journal of Personal Research*, 1926.

Hollingworth[8] however, carried out one of the first studies of the reliability of interviewing.

"Twelve sales managers agreed to interview 57 applicants for salesmanship individually and to rate them for their suitability for the position in question. These ratings were then transcribed into rank from 1 to 57. The result shows that applicant "C" is given the 57th place by one sales manager and first place by another. Applicant 'G' was given 5th place by one and 4th place by another. The entire lack of consistency shows the utter impossibility of reaching agreement on personal qualifications through the interview method. These ratings were all made by expert sales managers who were experienced interviewers".

Other studies by Webb, Magson, Fearing, Cantrill, Hill and Williams, and work carried out in the services during the war, are summarised by Vernon and Parry.[9] They mostly yield correlations between interviews of around 0.5 to 0.6.

In one investigation by Newman, Bobbitt, and Cameron[10] much higher figures of over 0.8 were obtained. Here the psychologist and psychiatrist interviewers of officer candidates had thoroughly analysed and specified beforehand just what qualities they were looking for.

The evidence regarding validity of the interview is still less favourable. McClelland[11] followed up pupils in Dundee secondary schools and showed that, if account had been taken of the judgments of industriousness or other personality qualities of primary school teachers, the number of instances of bad selection would have been reduced.

This does not mean, however, that the teachers could not judge suitability for secondary schools at all, but that the valuable element in their judgments was already incorporated in the ordinary school marks. Himmelweit's[12] research on the selection of students at the London School of Economics is even more devastating. Interview judgments by a board of University teachers showed zero validity when checked against degree marks 1 and 2 years later; whereas a short entrance examination gave small positive predictions of success; and a battery of aptitude tests considerably better predictions.

---

[8] Hollingworth. Vocational Psychology and Character Analysis, 1929.

[9] Vernon, P. E., Personality Tests and Assessments, p. 24.

[10] Newman *et al.*, "The Reliability of the Interview Method in an Officer Candidate: Evaluation Programme, *American Psychologist*, 1946, p. 103-109.

[11] McClelland, W., Selection for Secondary Education, London, University of London Press, 1942.

In spite of these drawbacks, the interview is very practicable and is used widely for borderline cases in selection procedures. It is desirable no doubt that in selection situations where large numbers of candidates are involved and where scientific follow up is possible, there is an improvement on current interview procedures. It would be better if the interview was confined to assessing certain traits which cannot readily be covered by other methods. It must be standardised and conducted by people who know its purpose.

Personality Questionnaires and Rating

From the early times, the traits of human personality have been estimated by directly asking questions concerning the person's attitudes, beliefs etc. and by getting others' opinion about him. A printed series of questions which are answered by making one of a limited number of answers, often only 'yes' or 'no' constitutes a personality questionnaire. The first of this type was the "psychoneurotic inventory' of R. S. Woodworth (1918). Symonds[13] reports an analysis of the subject-matter of the items of the psychoneurotic inventory, The principal types are: Physical symptoms — 28 items; Adjustment to environment — 20 items; Tears and worries — 16 items; Unhappiness, unsocial moods and conduct — 16 items; Dreams, phantasies — 10 items; the remaining items dealt with reactions to drink, tobacco, drugs, sex etc.

---

[12] Himmelweit, H. T., and Summerfield, A., "Student Selection—An Experimental Investigation', II, *British Journal. Social.* 1961, 2, p. 59-75.

[13] Symonds, P. M., *Diagnosing Personality and Conduct.* New York, Appleton—Century, 1931.

A variation of the questionnaire technique which has stimulated much research is the Pressy X-O Test (1921). It is devised not to measure any particular trait but it is applied in group form for revealing the stimuli that evoke emotional responses. It consists in 'crossing out' words according to certain instructions. Two forms of X-O tests are published. In test I, the examinee is instructed to cross out the words that are unpleasant to him. In test II, he crosses out words associated with key words at the beginning of each line. In test III, the words to be crossed out are the things considered wrong. In test IV, the subject crosses out everything that he has ever worried about.

The Personality Schedule of Thurstone (1930) is another example of questionnaire validated by an empirical method. The object of this test is the same as that of Woodworth's namely to discover neurotic tendency or general instability. In applying the Personality Schedule to college students, Thurstone found that intelligence had no relationship to 'neurotic tendency' but that the less well-adjusted tended to get slightly higher academic grades.

The Allport Ascendance-Submission Reaction Study (1928) is another validated questionnaire. Ascendance is defined as the tendency to dominate one's fellows in various face-to-face relationships of every day life, submission being the opposite characteristic. Since men and women face rather different kinds of situations in relation to this trait, separate questionnaires are provided for the sexes, the form for men having 33 items, that for women 35 items. The questions are in multiple choice form rather than of the more usual yes-no type.

The Bernreuter Personality Inventory (1931) is a questionnaire prepared to measure four personality traits, named as 'neurotic tendency', 'self-sufficiency', 'introversion-extroversion', and 'dominance-submission'. The correlations found between the traits are interesting. Several experiments have demonstrated that Neurotic and Introverted are almost identical, correlating to +.98 and that Dominance is nearly the reverse of both, its correlations being −.81, and −.67. Self-sufficiency is the most independent trait, but is somewhat related both to 'extraversion', and to 'dominance'. These correlations serve as a warning that independent personality traits cannot be distinguished merely by giving them different names and theoretical definitions.

Defects of Questionnaire

(1) The questionnaires sample segments of the person. None of the available questionnaires is able to portray the personality as a complete, dynamic organised whole.

(2) Some inventories purporting to measure two or more separate traits are measuring largely the same trait under more than one name.

(3) Difference in cultural factors will cause subjects to respond differently to the same question.

(4) A given question does not have the same meaning for all subjects.

(5) Many questions cannot be answered in 'yes' or 'no' form.

(6) Some subjects may have a tendency to over-rate themselves (self-halo) in self-rating.

(7) Any one can give false answers to a questionaire.

(8) The scoring of answers to items is often based upon the test author's own personal judgment and set of values.

Advantages

In favour of questionnaries it may be said that efforts to develop measures of personality traits, encourage greater uniformity in and precision of trait definition and description. When there is essential agreement in regard to definition of traits and terms, and in regard to behaviour and symptoms, the use of standardised inventories increases the objectivity of personality ratings and descriptions.

Rating

Rating is the method by which one person by, acquaintance with another, arrives at conclusions about some of his trait positions. It is desirable that raters should have had plenty of opportunity to observe the kind of behaviour they are rating and should be well acquainted with the ratees. Ferguson[14] compared ratings of travelling salesmen by managers who were acquainted with them to varying degrees and did obtain better ratings from the better acquainted; but all of them, would be fairly distant in their relations to the ratees. Slawson[15] found that a period of observation before rating improved the reliability of judgments to some extent. But Knight[16] showed that intimacy or length of acquaintanceship led to more over-rating and greater halo.

---

[14] Ferguson, L. W., "The Value of Acquaintance Ratings in Criterion Research", *American Psychologist*, 1948, 3, p. 290.

Teachers rate personality qualities of pupils. Without doubt the rating scale is the most practical way by which the teacher can assess the emotional attitudes of his pupils. For intensive individual studies, such as those made in cases of delinquency backwardness and nervous disorder, it is advantageous to use any reliable objective tests of temperamental traits which are relevant to the case under consideration.

For classroom conditions, with the majority of scholars, the rating scale provides sufficient suitable information. Certainly it has the possible disadvantage of personal bias, but as estimation of temperament and character will always remain to some extent an art as well as a science, we should consider the precautions to be adopted to minimise the subjective elements, whether error might arise. Usually a trait such as 'persistence' or 'suggestibility' is rated in five different degrees. These are designated by letters "a", "b", "c", "d", "e". Thus "c" indicates an average level in the trait, while "b" stands for a degree above average, and "a" for one much above average; similarly, "d" stands for a degree below average and "e" for much below average.

Now, assessments on such a scale, can be rendered more reliable if we remember the following:

(1) In the first place, we should be sure that we have a clear conception of traits to be rated. A few descriptive phrases relating to the term, aids in assuring uniformity in this respect

---

[15] Slawson, J. "The Reliability of Judgment of Personal Traits", *Journal of Applied Psychology*, 1922, 6, pp. 161-171.

[16] Knight, F. B., "The Effect of the Acquaintance Factor upon Personal Judgments", *Journal of Educational Psychology*, 1928, 14, pp. 129-142.

from assessor to assessor, while inclusion of the positive and negative forms of each trait in the rating schedule promotes consistency of connotation; for example: energetic (positive), lethargic (negative); persistent (positive), soon gives up (negative). Hollingworth and others have published lists of relatively equivocal and unequivocal traits though dependent upon how they are defined. An interesting study by Stephenson[17] showed how it is possible to analyse what a trait means to raters. He got 10 teachers to judge the reliability of 100 children and factor-analysed the correlations between the 10 sets of judgments. About half the teachers agreed quite closely with one another, while the other half agreed with each other but less closely with the first group. Clearly there were two conceptions of reliability. Better definition was called for.

(2) Secondly, a quality such as persistance or suggestibility can obviously vary considerably from individual to individual. If we judge a very large number of individuals for these two traits, we would find that the distribution of the five degrees would conform to the following numbers:

a	b	c	d	e
5%	25%	40%	25%	5%

Although smaller groups of ratings might deviate considerably from these figures and it is unfair to reduce them all to the same mean and standard deviation, yet they will serve as a rough guide, if we remember that a 'c' rating occurs approximately 40 times in 100; while 'b' and 'd' ratings occur 25 times in 100, and 'a' and 'e' only 5 times in 100.

(3) Thirdly "in rating the individual children we can increase the reliability of our estimate if we bear in mind five pupils typical of the five degrees of the scale for the trait under consideration"—Schonell.

(4) Fourthly, we should endeavour to get an aggregate assessment of the trait as exhibited by the pupil in a number of rele-

[17] Stephenson, W., "Introduction to inverted factor analysis, with some applications to studies in Orexis". *Journal of Educational Psychology*, 1936, 27, pp. 353-367.

vant situations. The possibility that the pupil may show marked persistence in one situation and not in another is always a potential weakness in the trait-rating scale; for example, a boy may show 'b' degree of persistance in handwork but 'd' in written composition. Such a variation is very likely and should be noted.

Furthermore, Valentine has noted that there may be specificity in certain traits, such as sociability, aggressiveness, sympathy etc. as the age range of individuals differs in different situations. For example, a boy may show extreme aggressiveness towards men but not towards children.

(5) Fifthly, we should obtain estimates from a number of judges, if possible, in order to minimise personal factors or particular influences which operate with a single assessor. Veron[18] points out "there is little point in having more than 4 or 5, unless the rating scale is very coarse. By inter-correlating the sets of judgments and applying the Spearman-Brown prophecy formula, it is easy to determine how many judges are needed in order that their combined rating may reach an acceptable level of reliability, say 0.9. The writer would suggest, however, that diversity of judges is more important than number. The ideal would be to have 2 or more of each type of judge, for example, 2 teachers, 2 psychologist-observers, 2 relatives, and a group of pupils and to aim for high agreement between the judges within type, but lower correlations".

A single rating has been found to possess no great reliability; serious differences frequently appearing between the ratings given by persons who know the subject equally well. This unreliability may be overcome by taking the average opinion of a number of raters, or by combining scores of a number of rating items which concern the same trait. Symonds (1931) has shown that the combination of the opinions of eight qualified raters is necessary in order to achieve a reliability suitable for individual diagnosis.

---

[18] Vernon, P. E., Personality Tests and Assessments, Methuen & Co. Ltd., London, p. 117.

The reliability of rating also varies somewhat with the trait being estimated. Teachers can rate the 'scholarship' of the students more reliably than they can rate 'persistence' or 'impulsiveness', probably because they have more definite observation on which to base their opinions in the case of the former trait. The reliability with which a trait may be rated is dependent in large part on the objectivity of the trait. Rugg and Slawson have pointed out that a general all round trait is more reliably rated than a more specific trait.

Validity of Ratings

Validity of rating will tell us whether we are measuring what we think we are or whether we can predict anything important from the ratings. Ratings may be almost perfectly reliable yet may miss the mark. Guilford[19] observes: "The process of validation of ratings has never been a very satisfactory operation. A good criterion of what we are trying to assess with the rating is lacking: otherwise we should probably not be bothering with ratings.........owing to the many systematic biases involved, ratings are poor material for inter-correlation studies, including factor analysis".

Thus, ratings of children's personality traits by teachers may be more practicable and yield more reliable results than questionnaires, but the prime defect is that "they represent crystallised emotional attitudes of the raters towards the ratees, even when the rating scales attempt to emphasise observed behaviour" *op. cit.*, Vernon P. 202). Peel suggests that for educational requirements, we must rely in the main on teachers' ratings of pupils' personality traits. The basic principles for rating scales are as follows:

(1) The trait must be clearly defined in terms of a definite situation met in school life:

(2) The trait must manifest itself in school life. School life must provide an incentive to the child as far as the trait is concerned.

(3) Use a loose card system (a card for each child) and

---

[19] Guilford, J. P., Personality, p. 154.

concentrate on one trait at a time.

(4) Avoid the tendency to bunch the estimate excessively.

Projective Tests

In school work we seldom use projective tests, but they are useful in understanding the background and the emotional influences underlying maladjusted and retarded states. In the projective test a highly unstructured or ambiguous set of stimuli are presented to the testee. The individual does not know the intention of the tester and so he may reveal some of the hidden reaches of his personality.

The Rorscharch test makes use of ten cards each of which contains an ink blot similar to that shown in Figure 16. The cards have designs on them, made up out of ink blots. The testee is asked to look at each card as long as he likes and to tell the tester what he sees on each card or what he thinks is represented there.

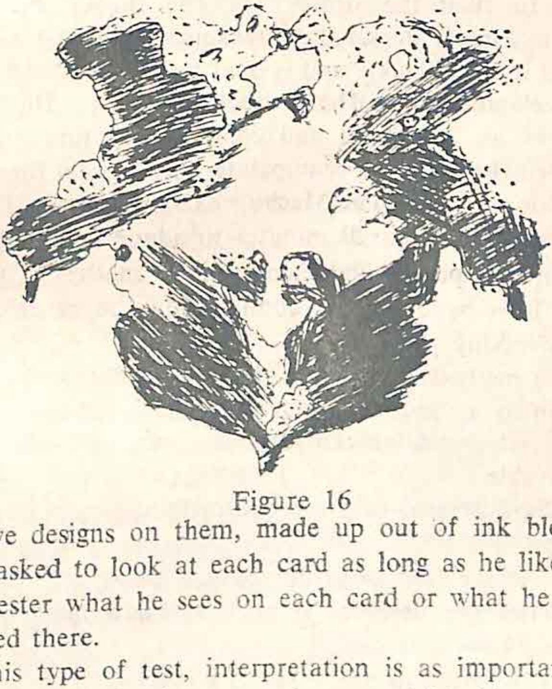


Figure 16

In this type of test, interpretation is as important as the test itself. There is always an element of intuition as well as of subjectivity in the interpretation of Rorscharch interpretation.

The scorer classifies each answer in three ways: according to location, determinant and content. Hertz[20] has found that trained scorers, agree on 93 per cent of scorings on principal factors.

Another projective test is the T.A.T. (Thematic Apperception Test). In this test, the subject is required to interpret a picture by telling a story about it—what is happening, what led up to the scene in the picture and what will be the outcome. The person (subject) projects himself into each picture and brings to it his own problems, conflicts, wishes, needs and attitudes towards self.

Children's Apperception Test is another projective test similar to the T.A.T. This test uses pictures of animals instead of people to elicit the stories. (1) The Blacky Pictures: A technique to explore Personality Dynamics. This test uses eleven cartoons of a dog, Blacky, and is used to test the child's psychosexual development. (2) The Driscoll Play Kit: This Kit is a cut away of an apartment and contains furniture and a doll family which the child can manipulate. It is useful for revealing family relationships. (3) The Machover Draw-a-Person Test: This test requires only 10 to 20 minutes to administer. The child is asked to draw a person and then to draw another of the opposite sex. It is believed that conflicts may be revealed in the drawing of bodily parts.

Project methods stress personality as an inter-related whole, rather than as a random mixture of isolated traits. They find out forces which underlie overt behaviours and are otherwise not observable.

The disadvantages of projective methods: as pointed out by Cronbach[20]

1) They are far from fully objective.
2) Responses are distorted if subjects know much about the test and how it is used.
3) Projective methods are time-consuming and cannot be used without special training

---

[20] Hertz, Marguerite R., "Scoring the Rorschach Ink-blot Test", J. Genet, *Psychol.*, 1938, 52, pp. 15-64.

Questions

1. What is an instinct? What are the characteristics of instincts as given by McDougall?
2. What is an emotion? How is emotion connected with instinct?
3. What is the distinction between complex emotion and sentiment?
4. In which way the structure of personality is dependent on emotions, sentiments and interests of an individual?
5. What do you understand by personality traits? Why is it difficult for the scientific study and measurement of the traits of personality?
6. Briefly describe the different factorial theories of persona lity and temperament as given by Burt, Cattell and Guilford.
7. Explain the psychosomatic and endocrinological relationship in pesonality.
8. How does development of emotions take place? Discuss in this respect the views of Burt and Vernon.
9. How would you distinguish between instincts and needs? What are the basic needs of a child? What are the processes of adjustments to fulfil these needs? Discuss.
10. What do you mean by defuse mechanisms? Are they the same with the Freudian substitutions?
11. Write notes on:
    (a) Sublimation, (b) Rationalisation, (c) Projection, (d) Identification, and (e) Regression.
12. Do emotional responses differentiate with age? Describe the development of three emotions like anger, fear and affection from childhood to adulthood.
13. What are the different ways of assessing personality? Critically examine the interview method in assessing personality.
14. How far questionnaires and ratings are helpful in estimating the traits of human personality? Discuss.
15. What do you think of projective test and personality? Narrate the advantages and disadvantages of projective method.

CHAPTER X

Educational and Vocational Guidance

Education is for life. White has said, "There is only one subject-matter for education and that is life in all its manifestations". The purpose of education is now determined in terms of the needs, purpose, goals of an individual's life in relation to society. Education should provide an individual knowledge, skills and understanding to enable him to be a useful member of society by contributing his best.

What is guidance? The guidance movement started with a vocational bias. Thus guidance was meant as an effort to provide an individual with a job. But guidance is required to an individual not only for selection of a vocation or profession according to his abilities and needs but to help an individual to solve problems that arise in life. A comprehensive definition of guidance considers it as "the process of assisting the individual to chose, prepare for, enter upon, and progress in courses of action pertaining to the education, vocational, recreational and community service group of human activities."[1]

Arther J. Johns states, "The focus of guidance is the individual in self-direction. This guidance may be given to groups or to individuals but it always is designed to help individuals even though they be in a group"[2]

The purpose of guidance is not to make an individual a parasite but to enable him to be a competent, self-reliant person who will be able to solve his problems of life. The person or the individual who will be guided should take the initiative and ask for guidance for performing a task or moving toward some objective. The guide himself should have sympathy, friendliness and understanding and he is known as guide because of his superior experience, knowledge and wisdom.

---

[1] A Manual of Educational and Vocational Guidance, 1857.

[2] Principles of Guidance, 1945.

Educational Guidance

Educational guidance aims at advising students in choice of their subjects of studies and in helping them to solve their difficulties in school adjustment. The guidance here mostly depends on the abilities, interests and aptitudes of the students. The success of a student in his final examination can be predicted with considerable accuracy on the basis of his performance on an intelligence test given at the time when he enters college. Objective-type examinations, which have become more and more widely used in the United States usually show higher correlations with the predictions made on the basis of intelligence tests than do the essay type examinations. Essay type examinations are very unreliable; results depend on the personality and the prejudice of the examiner to such an extent that if the same set of papers were to be marked by two different examiners, quite different results would be obtained.

Examination should be combined with group intelligence tests and standardised scholastic tests. Machelland observes: "In view of the fact that the correlation is higher with the tests than with the examinations, we must not be unprepared to find that a combination of an intelligence test with examination is better"[3].

Interviews are also taken for guidance purposes. The candidate's paper qualifications and entrance examination results are available to the interviewers. The main object of the interview was to assess the candidate's suitability to pursue a course of study, special consideration being given to the factors of general intelligence, previous education, training, and experience, interests and motivations, and personality and character. It may be noted here that interview fails completely in predicting success whereas the intelligence test prediction is reasonably adequate.

---

[3] Machelland, W., Selection for Secondary Education, 1942

The opponents of the testing procedures point out that intelligence is not the only factor and that character and personality play a decisive part. Even though it is admitted that character and personality are important, nevertheless, the interview would not be a proper method of assessing them.

The possession of high intelligence assures a student of success but it cannot be denied that he should apply himself to his studies. No one would claim infalliability for the forecasts made on the basis of intelligence tests; all that is claimed is that they measure with reasonable accuracy one of the important elements which make for success.

The problem of differentiation of intellectual ability, in the matter of educational guidance, is highly debatable. "At every age both a general factor and several group factors were discovered; but there was a marked tendency for the group factors to become increasingly predominant with increasing age."[4] During early childhood, specialisation is the exception rather than the rule. Garrett concludes, "as age increases, asbstract or symbolic intelligence changes its organisation from a fairly unified and general ability to a loosely organised group of abilities or factors".

Bernreuter puts the matter in a nutshell: "As the child gets older, more specific factors emerge, so that by the time he is adult his mental activity is analysable into specific factors, and the general factor is of little importance".

But Peel and Graham[5] (1951-52) conclude that "the evidence appears against differentiation of ability with increasing age, and rather in favour of integration". P. E. Vernon in his book "The Structure of Human Abilities" states that he "at one time accepted the view that 'g' tends to differentiate into more specialised abilities during early adolescence and adulthhood but later on he discovered that the average inter-correlations and the g-saturation were almost identical."

---

[4] Cyril Burt, *British Journal of Educational Psychology*, Vol. XXIV, Part II.

[5] Peel & Graham, "The Differentiation of Ability in Primary School Children", *Research Review*, III, pp. 31-34.

The writer, however, finds out that the multiple correlation co-efficient of the weighted battery of three tests — Vs. 18, Vs. 19 and Vs. 20 (of C.M. Fleming & E.A. Peel) with the composite 'T' scores for academic subjects in the Art Schools is very high. The correlation co-efficient between Vs. 20 (non-verbal intelligence test) and the academic criterion is also very good. The writer thus concludes that the non-verbal intelligence test may be said to have predicted success in academic subjects of art schools very satisfactorily but not conclusively. Apart from all these, we must, however, admit as Burt[6] points out that many bright children who have been transferred to secondary schools turn out to be misfits, not because their ability was misjudged, but because of external circumstances — poverty, lack of facilities for home work, lack of sympathy with the academic approach, lack of any attempt to foster social or intellectual ambitions, discrepancies or conflicts between the ideals of the secondary school and the ideals of the child's own relatives — in a word, social as distinct from individual factors. Intensive investigation on the sociological aspects of the problem are also needed".

Traits such as persistence, interest, level of aspiration and emotional instability can now be measured with fair accuracy, mainly by individually applied tests, but also by group tests, and in several investigations such group tests have been shown to predict success at reasonable levels of accuracy. "These tests are, however, in their infancy and considerable improvements can be expected in the near future," observes Eysenck.

The test results are used in various ways for guidance. Students working below expectancy i.e. whose work was not up to the standard indicated by their intellectual abilities, can easily be located and it has been shown that counselling service, given to such students, leads to marked improvement in their work. University teachers and administrators are frequently requested for advice on the part of students wishing to specialise. Such advice can be given much more adequately when objective facts regarding the student's intelligence, interests and personality are known from a properly carried out testing programme.

---

[6] Burt, *Journal of Educational Psychology*, Vol. XVII, Part II.

It is also to be remembered that in order to offer guidance to pupils in their educational problems, the guidance (the teacher) has to develop good inter-personal relationship with the students. In order to be a skilled counsellor, he should possess good knowledge of various scholastic tests.

The factors involved in educational guidance are mainly the home environment of the pupil, his family profession, the aspirations of the parents, the nature of the institution and qualities of teachers teaching the student. Thus the problem of educational guidance cannot be solved without full co-operation of the parents, the community, the school and the teacher. The aim of educational guidance is to enable the student to adjust his aspirations in terms of his potentialities. When a person cherishes a high hope without keeping in view his potentialities and limitations, he is likely to be frustrated. The main purpose of educational guidance is to enable a student to set a realistic goal for himself.

Education is guidance, rather guidance is an inseparable part of education. It is observed by W. D. Wall, "......guidance is implicit in education — whether we are considering the guidance of parents, of school children or of adolescents at the threshold of their career".[7] Wall states further, "concept of guidance as an intrinsic aspect of education must also include an analysis of the environment, in terms of the needs of the children, the attempt to determine how these needs may be supplied by the family, by the school or by some other means and the necessary help to parents and teachers which will enable them to discharge their functions".

Teachers will be counsellors. Guidance and counselling go together. Guidance cannot be thought of without counselling. Ruth Strang mentions about four trends in guidance. The first trend, according to her, indicates greater participation by teachers in guidance programme. "The second trend is towards developmental guidance. This is in part an effort to apply the guidance process to the whole personality of the individual rather than to fragmented elements such as his vocation, health, education etc." The third trend indicates interest in client-centred counselling. The fourth trend in guidance is towards team approach. This team approach is necessary because of the complexity of modern life when it is necessary to study an individual in such a manner as to reveal his total picture in order to provide satisfactory guidance and counselling.

---

[7] *Ibid.*

It cannot be denied that successful teaching is indirectly a kind of counselling. A successful teacher knows his pupils, their needs and problems and tries to become their friend, philosopher and guide, and that a harmonious teacher-pupil relationship makes it possible.

It is found that mainly three types of problems are brought before a teacher-counsellor, and these problems are not isolated but inter-related. Firstly the problem may be related to school and curriculum; secondly, it may be an aspect of vocational interest; and thirdly it may be related to the problem of adjustment.

The teacher-counsellor can successfully solve these problems when he gets sufficient time to be acquainted with his pupils and can perform the following functions:

(1) He has to administer psychological tests; (2) He should collect and at the same time maintain the personal data of his pupils; (3) He must gather information about different types of courses in different institutions and co-operate with the local agencies in collecting such information; (4) He should help the individual pupil who is in difficulty in choosing curriculum courses and in taking up employment after leaving school; (5) He should assist youth employment services, if there are any, in placement of pupils in different suitable jobs; and (6) above all, he must have undergone a psychological training in order to interpret the results of psychological tests, which he administers at the initial stage.

It is very much essential that in order to make the programme of counselling and guidance effective, there must be an arrangement for compilation of pupil-data in the school. There must be cumulative record and of every pupil.

The following types of data are to be collected about every student : (1) General data — name, age, address, school attended; (2) Home and neighbourhood; (3) Appearance, physique, health and medical history; (4) Intellectual abilities including his general mental ability, special aptitudes and interests; (5) Personal habits; (6) Interest in corporate activities of the school: (7) School attainments — both academic and practical; and (8) Information about the objectives of the pupil's life.

These data should be reliable and valid and, therefore, should be collected with utmost care and the tests applied for testing the mental ability, atitude and interest, personality etc. should be reliable and valid.

In order to estimate a pupil's ability and personality traits, a 5-point rating scale may be used.

While rating the abilities and personality traits of pupils, the following precautions must be adopted:

(1) Rating should be limited to those traits of personality which are overt in nature. It is easier to judge a quality like sociability or industry compared to a trait like egoism or self-confidence :

(2) In order to estimate the ability, interest and personality traits, observations of pupils' behaviour in a variety of situations will be needed;

(3) It is difficult to assess abstract qualities and so the qualities to be assessed must be analysed into concrete and relatively specific aspect of behaviour;

(4) The variables like persistence, discipline etc. should be clearly defined and different grades should be concretely described.

(5) The 'halo error' should be avoided. In using rating scale, it will be better to rate all the children of the class on one quality at a time and not a single child on all the qualities.

This educational guidance, however, is more or less dependent upon the emphasis on the importance of innate differences and the predictive usefulness of the developing science of educational testing. Pearson, Burt, Terman and others did not hesitate to assume that pupils who did well at an early age would maintain their relative superiority in later years.

But there are reasons to believe that the longer the children remain in unstimulating environments, the lower becomes their performance in tests of what is commonly called intelligence and that the earlier they are transferred to intellectually stimulating situations, the higher is their subsequent measurable response.

Vocational Guidance

The type of employment which can be secured after leaving school, is directly associated with the nature of the satisfaction provided in the school setting. Educational guidance makes room for vocational guidance. Assistance in the choice of suitable employment is now in many countries coming to be recognised as an essential activity of the secondary school.

A successful programme of vocational guidance is dependent upon a careful analysis of the skills and attitudes required in each available occupation — coupled with a study of the present abilities and personality of the candidates who are in search of employment.

The General Conference of International Labour Organisation in 1949 described vocational guidance as "assistance given to an individual in solving problems related to occupational choice and progress with due regard to individual's characteristics and their relation to occupational opportunity". Different people have different abilities and in an ideal society each person would be called upon to contribute work of a kind he was particularly qualified to do. It is very important that in vocational guidance only the interest of an individual is not taken into account. The interest of the society is also an important factor.

The problem of guidance has, therefore, two aspects — (1)

the individual, and (2) the social. There must be harmony between the needs of the individual and the demands of society.

The purpose of vocational guidance is to enable a student or a young person to have a correct evaluation of himself. Considering the uniqueness and the factor of individual differences a vocational guidance worker tries to provide such counselling as is in the interest of the individual and his society. We must remember the difference between occupational selection, where the person devising the selection procedure is usually indifferent to the fate of those who are turned away. In vocational guidance, the guidance expert is concerned with placing his particular individual in the type of work best suited to his interests and abilities. In vocational guidance emphasis is being put upon the part which is played in the later vocational success of adults by their social relationships, mental health, interests and wishes. Dr. Fleming[8] holds "whiie there is some positive correlation between the initial score of a group in a battery of analytic tests of aptitude and their later competence in the more complex skills demanded by entrance to a trade or to professional life, the exact degree of prediction for any individual is not high". It has been suggested that a solution to this problem can be found in the preliminary admission of all candidates to a wide variety of secondary sources followed at a later date by tentative discussions based both upon expressed vocational wishes and interests, upon vocational openings and upon success in the subjects so far attempted.

Is this vocational interest of an individual dynamic? Does the interest of a person change due to the influence of environmental factors? Is it likely that many shift their centres of interests even at a considerably advanced age for the sake of better adjustment to the life situation? Strong[9], however, holds that interests like attitude and habit "are stabilised sets of dispositions resulting from experience and determining resulting behaviour". But he admits that though the interests involve stabilised patterns still they may be modified by re-education. Thorndike[10] endorses this view as he concludes: "The results of our experiments support the conclusion that a person can be taught new attitudes and interests". Interest thus no doubt depends to a certain extent upon external factors and environment has large part to play in the formation of interest.

---

[8] Fleming Dr. C. M., Adolescence, p. 189.

[9] Strong, E. K., Vocational Interests of Men and Women, p. 8.

Vocational Ability

Efforts are being made to discover vocational ability of students, for vocational guidance. According to Brewer, vocational ability may be discovered by the following procedures:

(1) Through practical studies and methods of teaching that show connection with vocational life. (2) Through tests drawn from sample tasks in occupational life, measuring the abilities developed in planned or casual experiences. (3) Through counselling and questioning, which may bring to light interests and abilities. (4) Through working experience, with or without pay.

Guidance begins from primary school stage as guidance is inherent in the very nature of education. Guidance at this stage serves the purpose of helping the child in his adjustment with the school and the curriculum. The vocational interest is not so important at this level. Guidance is helpful in terms of individual and social adjustment. It helps the child in his personality development and scholastic progress. The child at this stage is encouraged through activity method to learn social skills and acquires understanding of his social environment. According to A. J. Jones[11], "guidance in the elementary school, by whatever name it may be called, is the foundation of all later attempts to help individuals, which gives the pattern for later guidance, for it is unitary in character and is directed toward the individual with a problem, and not toward the type of problem that faces him". Guidance at this stage takes into account the child as a whole and seeks full co-operation of his parents and community.

---

[10] Thorndike, E. L., "The Interest of Adults", *Journal of Emotional Psychology*, 1955, pp. 26, 206.

[11] Jones, A. J., Principles of Guidance, pp. 293-44.

At the threshold of adolescence, the Junior High School students face problems pertaining to their emotional and social needs. They show interest in certain occupations and vocations. Guidance is required to help them to have a correct view of different occupations.

In America, most of the Junior High Schools have a plan for group guidance. The guidance courses generally deal with the following topics:

(1) School orientation; (2) Development of study habits; (3) Improvement of personal adjustments; (4) Growth of social relationships and responsibilities; (5) Settlement of life goals; (6) Development of plans for education and other activities to attain these goals; (7) Tentative selection of an occupation.

The purpose of guidance at this stage is to enable students to develop such attitudes as are helpful in their personal and social adjustment. The students are guided to solve their problems by means of their own efforts.

At the secondary school stage, the guidance is mainly vocational in nature. The students at this stage are supposed to learn much about their personal and social adjustment and they are now in a position to pay more attention towards future vocations. At this stage, the students are guided and advised to make proper choice of subjects of study contributing to their vocational preparation.

C.M. Fleming says "a child aged thirteen or fourteen after two or three years of exploratory activity in a well balanced comprehensive secondary curriculum is in a much better position both to know his own preferences and to reveal his personal reactions and his powers. His performance at thirteen or fourteen will also be nearer to his performance at fifteen or seventeen than it was at the early age of eleven."

If the years of schooling have been wisely employed — with due attention to the activities and the occupations of the society in which he lives — he will also have more ideas as to what is required in the type of employment open to him; and it will become progressively more possible for his teachers to direct his attention to intelligent preparation for a 'suitable' vocation.

The vocational guidance given to secondary school students should cover the following aspects of a vocation, as suggested by A. J. Jones in.

Principles of Guidance :

(a) Suitability for the occupation involving ability, physical and mental characteristics aptitude; (b) Service to society; (c) Interest in the occupation; (d) Satisfaction in the work; (e) Financial returns, immediate and future; (f) Opportunity for employment; (g) Opportunity for advancement; (h) Health conditions; and (i) Social conditions.

Vocational guidance at secondary stage does not end merely by providing information about different vocations but it also includes the problem of placement. The school should not only help a student in getting a job according to his ability and interest but should also make arrangement for follow-up study of the student. Guidance of interest and analysis of occupations, combined with supervised visits to local works and friendly discussions with representatives of various professions, will enable teachers to assist the pupils in the choice of a suitable route out of the school.

Guidance like education is a life-long process. Guidance aims at developing self-reliance, initiative, leadership and making an individual useful for his society.

Success in the activities of adult life is related to the development and the co-operation of the whole person.

It is admitted that it is really difficult to determine the correlates of success in different courses of study and vocations. It is also affected by social relationships, by opportunities for contributing with responsibilities to different vocations of life. Predictive certainty of testing personality traits and intelligence may not always be of high degree and that reminds us of the complexity of human functioning. Adaptation effected by skilled vocational guidance is certainly a good index to the educability of human beings providing justification for the wholesome maturing of personalities.

For Further Reading

Wall, W. D., Manual of Educational and Vocational Guidance, 1957.

Arthur J. Johns, Principles of Guidance, 1945.

Brewer, Education as Guidances.

Fleming, C. M., Adolescence.

Strong, E. K., Vocational Interests of Men and Women.

Thorndike, E. L., "The Interest of Adults", *Journal of Educational Psychology,* 1955.

Lambert, C. M., "A Study in Interests" *Times Educational Supplement,* Feb. 17, 1945, and Feb. 24, 1945.

Questions

1. Explain clearly the difference between Educational Guidance and Vocational Guidance.
2. "A successful programme of vocational guidance is dependent upon a careful analysis of the skills and attitudes required in each available occupation — coupled with a study of the present abilities and the personality of the candidates". Do you agree? Justify.

CHAPTER XI

Individual, Society and Education

Individuals and the Group

The infant enters his society not as a zero but as an organism. This unique organism makes demands upon his society, just as society soon comes to make demands upon him. As the infant — later the child and youth — comes to participate in the society in which he finds himself, he acquires a personality.

Society is made up of individuals and every aspect of the individual's growth in society is studied by the social psychlogists. Individuals come together in groups. A group is not an aggregate of individuals. A group is a number of people in interaction with one another and it is this interaction process that distinguishes the group from an aggregate. In this process of interaction, the actions of one are affected by the actions of another. It takes place by means of communication, anticipation and 'role-perception'.

Interaction, while it mutually affects two or more people, may remain relatively static and unproductive of change in human relations. It is important in the study of individuals and groups because it takes place through communication and by which two or more individuals are enabled to reach common understandings and effect co-operative behaviour.

Man is a social animal as he constantly views himself through another person's eyes, because he variously experiences the thoughts, feelings and acts of another individual.

The relation between the individual and the group is a vexing problem in social psychology. Although it is stated that the individual and the group are inseparable, the problem cannot be stated so simply. It was thought that the group is a collection of individuals and when there are no individuals there is no group. The social psychologists now believe that individuals behave differently in groups than they do as solitary persons. Particularly interesting and convincing is Sherif's[1] well-known experiment on the 'auto kinetic' phenomenon. When an individual was exposed for a few seconds to a fixed point of light in a dark room, he saw it not only as a moving point but estimated its motion in terms of his own frame of reference or 'anchorage point'. When several individuals, each with his own anchorage point, were permitted to compare their own range with those of others in a group, the individuals modified their frame of reference in the direction of the group's norm. They saw the light in other words, as the groups as a whole saw it, despite their prior individually established anchorage points.

Several experiments have shown that most individuals work faster when in the same room with others doing the same kind of work than they do when they work in isolation. F.H. Allport (1920, 1924) had found such increased productivity even when he instructed his subjects not to compete with each other. He had been led by these findings to a general theory of 'social facilitation', according to which a person who is doing something is stimulated by the sight and sound of others doing the same thing to put increased energy into whatever he is doing. Dashiell, however, felt that it was not clear to what extent such increased productivity was due to social facilitation and to what extent to rivalry. Even though Allport had instructed his subjects working in groups not to compete and had told them that they would not be judged competitively, it was still possible that they might have adopted a competitive attitude. Allport found that more ideas were produced in the group than by individuals working alone. When the ideas were compared for their quality, however, he found that those of superior quality occurred more frequently in the solitary worker than in the group. According to Dashiell[2], participation in the group increases speed of performance but decreases its quality and accuracy. In most cases of group performance there is a levelling effect, so that the poorer individual workers improve in a group, while the superior ones perform less satisfactorily, that is the group becomes more homogenous.

---

[1] M. Sherif, 'A Study of some Social Factors in Perception', Arch Psychology, 1935, 187.

[2]. J. F. Dashiell, 'An Experimental Analysis of some Group Effects, *Journal of Abnormal Social Psychology*, 1930, 25.

The structural and functional factors that determine a person's social response originate partly in the person, in response to his psychological limitation and needs. Gestalt psychology tells of the structural factors arising from the nature of perception, the spatial relations between the different parts and the relation of figure to ground. The functional factors also originate in the culture to which the person belongs. The social standards, the customs and ideals of the groups with which the person communicates, all influence his actions.

Classroom, playground, home or any form of group life must provide an outlet for the need for security, responsibility and adventure of its members.

Thwarting of the need to give and to receive affection in the first few months of life were found to be associated with delinquent behaviour at later stages, and the awareness of a lack of interest and affection on the part of foster-parents or teachers has been noticed to transform apparently normal children into unhappy and over-anxious neurotics.[3]

A sense of security is likely to be strengthened by experiences of orderly living. It is necessary that life be lived in a reasonably stable environment where physical needs are met with sufficient regularity and 'where budding confidence is not stifled by capricious cruelties, inconsistencies and tyrannies'.

Security, adventure, responsibility are all human needs; and in so far as a teacher can meet these needs, he may be said to be co-operating with his pupils and not working against them.

McDougall[4] laid emphasis on the place of instincts and relied in particular on the instincts of gregariousness, parental love, reproduction and self-assertion. In terms of these instincts, he did explain the attitude of the individual towards his country and his sentiments towards religion and other abstract values.

---

[3] Burt, C., 'The Incidence of Neurotic Symptoms among Educated School Children', *British Journal of Educational Psychology*, X. 1, 940, pp. 10-15.

[4] McDougall, W.; Introduction to Social Psychology.

Freud explained that the social responses of an individual are largely determined by his sex-tendencies and aggressiveness being frustrated by the requirements of community life. In order to lead a civilised life, an individual has to repress his libidinal urges. This repression can be considered as the price the individual pays for social life.

Lewin[5] speaks of the contemporary needs in the life of an individual and he avoids the explanation of Freud. He has said that 'everything which affects behaviour at a given time should be represented in the field existing at that time, and that only those facts can affect behaviour which are part of the present field'.

Lewin's field psychology diagramatically represents the individual in his social setting. The social setting is called the 'field' and includes all that which may affect the child at a given time psychologically, socially and physically. In Lewin's view, the group is not the aggregation of its members. It is a structure that emerges from the interactions of individuals, a structure which itself produces changes in the individual members. Research has shown that it is difficult to predict the behaviour of persons in a group from pre-measures of personality variables. The clear fact emerges that 'when individuals are put together a system is created (and this) is the critical fact which cannot be overlooked'.[6]

Lewin includes such concepts as locomotion (psychological, social and physical) force, position in the field, field boundary, barrier, goal, valence and structure of life space.

Locomotion is psychological when a person attains his goal, and it is social when he achieves membership of a desired group.

---

[5] Lewin, K., Principle of Topological Psychology.

[6] R. L. Solomon and T.N. Lemanu, *Report for the first five years, 1946-51*, (Cambridge, Mass : Laboratory of Social Relations, Harvard University, 1952).,

A social field is spatial or topological but its essential property is mobility. This mobility is changing the pattern of interacting individuals.

The structure of the field determines the position of the person within the field. If the field is unbounded, as in the case of a city street, persons may enter and leave it when they like. But the membership of a school class, for example, is bounded as the entry here depends upon certain conditions and qualifications.

The concept of 'Vector'[7] in physics implies a force having both direction and magnitude. If we define 'force' as a directed excitation state, the concept of 'Vector' can be used to describe the behaviour of a group. Interacting individuals trying to solve a problem or directing their action toward a common goal are behaving vectorially, i.e. they are moving in a certain direction with all the psychological energy available to them by the character of the field situation at the moment. A vector thus represents locomotions in a field, changes in field structure, the goal of individuals working together etc. When strong barriers to interaction exist, the magnitude of the vectors directed toward a goal will be greater than when the field is fluid or the barriers are few.

The concept of 'valence' represents the attraction or repulsion value of an object for an individual or a group. It describes cohesive and disruptive forces in group relationships or co-operation and conflict.

All boundaries act as barriers and require some force to be crossed. Thus a boundary is permeable.

Lewin's field psychology is useful in directing our attention to the relatedness of the individual to his social environment. The educationists are wrong in abstracting the child from his home and class background because 'child in a social millieu' is the real unit

Society

THE IMPACT OF ATTITUDE — ON SOCIAL LEARNING: An attitude is 'an enduring organisation of motives, perceptions and emotions with respect to some aspect of the individual's world. 'There exists little distinction between sentiments and attitudes when sentiments are constellations of emotions and instinctive tendencies about certain objects and ideals. Personality has been defined as a constellation of social attitudes, closely resembling McDougall's 'self-regarding' sentiment.

---

[7] K. Lewin, Principles of Topological Psychology, McGraw Hill Book Co., New York, 1936, p. 87. ...

Attitudes provide the 'frames of reference' of a person and at the same time it must be admitted that objects toward which attitudes are formed are perceived not in a vacuum but in some perceptual context. What actually happens is that previously experienced objects tend to be perceived in a supplied context — i.e. a frame of reference — determined by previous experience. A person's attitude toward a single specific issue does not often change before his frame of reference has changed in some way. The perceptual part of the attitude is most likely to change first. A person's attitude toward one thing may carry with it a frame of reference which determines the way in which he judges some other thing, and in this indirect way it influences his attitude toward that other thing. One attitude thus may provide a frame of reference for another attitude, but strictly speaking an attitude cannot constitute a frame of reference because 'the latter refers only to the perceptual part of the state of readiness which constitutes an attitude'.

Attitudes determine the course of social learning. Our attitudes towards, for example, communists, nationalists, etc. determine the way of accepting or rejecting these people on future occasions. An intense patriotic attitude determines the course of learning in defending the country at the time of national disaster.

School teachers often fail to recognise the importance of attitudes to learning and also fail to appreciate the individual differences in ability and attainment. It is found that many able teachers, masters of their subject matter, overlook the function of attitudes in connection with the failure of the child.

The teachers only see their subject matter and pupils from their own frame of reference and do not care for removing the personal attitude-difficulties of their pupils. Much of the trouble which we mark in backward children who are not innately dull and delinquent children is due to attitude. Because of attitude, such pupils do not want to learn and refuse to face up to the school situation. Rather, they select percepts and concepts they want to learn. Teachers see only the bad and undesirable traits of such children and the children also see the bad points of these teachers.

Thus social learning explains the formation of prejudice and attitudes and tries to bring change in the content of attitudes by introducing new percepts and concepts.

An attitude once formed is very difficult to change. The giving of explanations, pointing out of its wrongness are not enough to change the attitude. A maladjusted child when he forms an attitude, does not easily submit to changes of his content of attitude.

In order to discuss the relationship between social learning and the contents of attitudes, we must remember two things: (1) that prejudice acts as a frame of reference for future course of social learning, and (2) that social learning must explain how the prejudices and attitudes are formed and how to overcome the resistance to change.

Needs and Attitude

We have seen that learning will not take place unless a need is satisfied. The same condition is present in the formation of attitudes. The immediate needs — psychological, social and physical are relevant to the study of attitudes. We cannot, however, deny the remote needs of infancy and childhood, which play an important part in psychoanalytic theory. But for the purpose of research in the field of development of attitudes, the existing manifestation of the needs is more important. The needs of recognition, responsibility and adventure, which are social in nature, must be fulfilled for the development of healthy attitudes.

The concept of ego-involvement in learning has its part in the formation and development of attitudes. The individual may react in a neutral and detached manner or he may be involved in a serious way in social situations in order to enhance his social position.

At the lower levels, the attitudes of individual children to school work, classmates, teachers, parents, etc. are based on need reduction but at the higher levels they are the results of the ego-involved motives.

Social Learning

The meaning of learning is not specifically learning in class room but in the broader sense it means social attitudes. 'Learning has to be viewed as the process of socialisation of the child and a pre-requisite for social participation of the adult'. The theory of social learning will explain the development of personal responsibility, democratic and autocratic behaviour, insight into the complexities of life and moral action and values.

The Gestalt psychologists have explained learning as a change in experience. Learning is re-organisation of experience by insights and 'good' Gestalt. But we must go beyond these cognitive and perceptual factors and must look for social and emotional factors. The psychology of ego-involvement goes far to explain all these factors.

Learning as a change of behaviour has been explained by Thorndike, Pavlov, Watson and Hull with whom the reinforcing agent in learning is a mechanical stimulus. The social behaviour theory accepts individuals and groups of individuals (not a mechanical stimulus) as the reinforcing agents.

The three phases of learning: i.e. the elementary training of an infant and young child; the more complex form of knowledge and skills in school and university; and social learning with the personally mature adult can be explained by Hull's 'reinforcement', Gestalt's 'insight' and Sherif and Cantril's 'ego-involvement' respectively.

The end of social learning is the formation of desirable social attitudes. It also leads to the development of higher sentiments and values. But before this highest level of learning is attained genuine insight has to be achieved and a critical social awareness must be there.

Leader and the Group

It is an ancient belief that in every group certain individuals exist who will try to dominate over others. Those who triumph over others are considered as leaders. What are the qualities in leaders that make them acceptable or effective as leaders? It is found that leaders of different groups have widely different characteristics. Some groups need 'mild' leaders and others 'aggressive' ones.

Brown (1936) points out that a leader must have 'membership character', i.e. he must belong to the group, be a member of it himself, subscribe to its norms, and understand its common meanings. Moreover, he must be 'super ordinate' in one or more characteristics. In other words, he must be considered stronger than the average group member, or brighter, a better organiser, a more fluent speaker, more tactful, in fact, more almost anything which is relevant to the conditions of a particular group. If leadership is studied from this point of view, we shall not expect to find any specific attitudes which characterise all leaders.

The group leader is responsible for the morale of the group. He determines group structure, group atmosphere, group goals and group ideology and group activities. The functions of the leader vary with different kinds of groups and he may be authoritarian, democratic or *laissez faire*. But whatever be the nature of the group, all leaders must partake to some degree in the functions as an executive, planner, policy maker, expert, external group representative, controller of internal relationships, purveyor of reward and punishment, arbitrator and mediator and an example to others.

The leader is executive in the sense that he executes the goal of the group. The plan of the work which the group as a whole under the guidance of the leader executes depends on the leader. The leader discusses the plan and he is thus the planner. The policy controlling the group is devised by the leader and the group adopts the policy. The leader is the expert as he sets the ideal and executes it taking the initiative. He shows the path and he is the expert. The leader is the external representative of the group. It is impossible for all members of a large group to deal directly with other groups. Leader is the 'gate-keeper' as Lewin says and it is through him that the outgoing demands and contacts are channelled. The leader is a controller of internal relationships. The group leader does not primarily control others, but initiates actions that cause others to perform some of these that give satisfaction to the group as a whole.

The leader acts as a purveyor of rewards and punishment. The group members act cohesively being rewarded by the leader and the leader also does not fail to punish when there is negligence in realising the earmarked goal. He is also the arbitrator and mediator. The leader is the model of the group. The leader is a symbol of the group. The King of England is a classic example. The leader is 'surrogate' for individual responsibility. Erichfromm (1941) has written cogently about the tendency of the people to delegate critical responsibilities to their leader in an attitude of fear and escape from freedom. The leader is a father figure. He protects the group and rears it up. The leader may also be the 'scapegoat'.

Different Kinds of Leadership

Groups change with the change of leadership. We find different effects in different groups led by different kinds of leaders. A significant research in this field was carried out by Lippitt and White[8]. They investigated the effects of three kinds of leadership on the activities and attitudes of small groups of boys. The kinds of leadership were — authoritarian, democratic, and those of *laissez-faire*. The groups were each made up of five boys. Each group carried out communal tasks.

In the authoritarian group, the policy is determined by the leader: techniques and steps to be followed are all dictated by the leader; not all at a time, but one at a time. The result is that future steps are always uncertain to a large degree. The leader not only dictates the particular task but also selects work such as the selection of a companion for each member. The leader keeps himself aloof from active group participation, except when he demonstrates.

[8] Lippitt, R., and White, R. K., "The Social Climate of Children's Groups", *Child Behaviour and Development*, Chapter xxviii.

In the democratic group, policies are evolved by group discussions and the leader encourages and assists. At the time of discussion, general steps to group goal are sketched and in case technical advice is needed, the leader suggests two or more alternative procedures from which choice could be made. The group members are not dictated by the group leader but they are free to choose their co-workers and the division of the task is left to the group. The leader is a regular group member in spirit without doing too much of the work.

In a *laissez-faire* group, there is a complete freedom for group or individual decision with minimum leader participation. The leader supplies the various materials and also makes it clear that he shall supply information when required. He takes no other part in work. There is complete non-participation of the leader, and there is no attempt to appraise or regulate the course of events.

Several recordings were made of all that was done and said by the groups during the presence and absence of the leaders. The democratically led groups showed a good deal more cohesiveness than the authoritarian groups. The following differences in the behaviour of group members were indicated: Characteristic behaviours of democratic groups were those of friendly and confiding type and 'group-minded suggestions' were made. There was group activity before the leader arrived and during his absence there was relatively little 'horse play'; no 'scape-goating' and there was the use of 'we', 'us' and 'ours'.

Behaviour characteristics of authoritarian groups were: critical discontent; demands for individual attention; group activity continued only when the leader was present; considerable 'horse-play'; considerable 'scape-goating'; use of 'I', 'me', and 'mine'.

The members of the authoritarian groups resented their leaders' 'interference'. The leader was a source of threat to members of the authoritarian group, but this was not so in the democratic group. The members of the two latter groups were relatively more 'goal-oriented' in relation to the tasks, whereas the members of the authoritarian groups were relatively 'threat-oriented' in relation to the leader.

The *laissez-faire* group was least constructive. In the authoritarian group, the attitudes of the members towards each other were aggressive and the same sort of attitudes were also found in *laissez-faire* group.

The well-known study of Lewin, Lippitt and White gives the impression that the *laissez-faire* leader does little or nothing. He is fundamentally a passive and unproductive individual.

In this connection, it will be useful if we analyse the teacher's function as a leader in the class and how he affects the group.

The teacher as an autocrat leader constantly checks the activities of the students. He wants rigid discipline and expects that all his orders will be immediately accepted. He does not believe in praising the students. Rather he thinks that praise would spoil them. He does not give any responsibility to the students.

The reactions of this sort of leadership with the students will be that there may be submission but there will be revolt and the students will dislike the leader. The pupils become unwilling to co-operate and may indulge in 'back-biting'. The pupils do not do any work when the teacher leaves the room.

The teacher as a democratic leader shares in planning and decision-making with the group. He gives help, guidance and assistance to individual students. The teacher encourages as much group participation as possible. He appreciates and praises the group cohesion. The reactions of pupils are that they like their work, like each other and like their teacher. Here the quality as well as the quantity of work is high. The pupils praise each other and they themselves take the responsibility of the work. The work goes on whether the teacher is in the room or not.

The teacher as a *laissez-faire* group leader has little confidence in dealing with the pupils. He finds difficulty in making decisions. He cannot chalk out clear-cut goals himself. He neither encourages, nor discourages students. He does not join in their work, and does not help or advise them. When the teacher is a *laissez-faire* type of group leader, there is low morale and poor sloppy work. No team-work is found with the students. No one knows what to do.

The skills and attitudes of leadership can be trained. The leader is to be allowed to experience some of the problems of leading a small group. Psycho-drama is one such technique in which one man acts the leader role and a colleague the role of a subordinate person.

Group Morale

We can test the merit of a group leader from the morale of the group he leads. Morale refers to the unity and solidarity of the group — its *'espirit de corps'*.

When a group is cohesive, that is, when its members' behaviour is determined by shared understandings of their own and one another's roles, and whose members are motivated to take their roles as commonly understood, and when all feel a real need to achieve the goal of the group — the group possesses a high morale. But this cohesiveness is not determined by external pressure.

The adaptability of the group to changing circumstances is another criterion of high morale in the group.

There are misleading criteria of morale in groups: (1) ORDERLINESS : orderliness is not a true criterion; often it is found that a class is very orderly but this orderliness may be due to external pressure. (2) PRODUCTIVITY : Productivity may similarly be due to external pressure. (See the reports of the United States Strategic Bombing Survey about German productivity due to external pressure). (3) CONFLICT : Conflict in group-members is not always a sign of low morale. It provides life in the group.

Determinates of Morale

(1) POSITIVE GOALS : As Watson has put it, 'Morale first of all, demands a magnetic pole toward which the aspirations of men are drawn'. (2) SATISFACTION OF 'ACCESSORY' NEEDS — needs for self-expression, recognition, prestige etc. (3) TIME-PERSPECTIVE: They must know the future. Many soldiers were demoralised by the uncertainty as to what would happen to them next. (4) EQUALIY OF SACRIFICE (5) FEELING OF SOLIDARITY: Each member should be fully ego-involved in the task

in hand.

By applying socio-metric tests, the internal cohesion of the group and its adaptability can be measured. Moreno[9] first invented the science of 'socio-metric' tests. Moreno found that the most beneficial group were those in which there was a natural affinity between the individuals — when groups were made on acceptance, likes, dislikes, and indifference.

Socio-metric tests may be carried out by two methods i.e. (a) by interview, and (b) by psychodramatic technique. The interviewers ask the group members about their first, second and third choice. The spontaneity of choice is tested by psychodramatic technique.

The groupings should be made not according to mental and physical uniformity but through voluntary choice. Jennings observes that spontaneity helps in the development and blooming of personality

Each member of a group is asked privately who his friends are, whom he likes to work with, and whom he talks to. He may also be asked to name those he does not like. The results are then put in a sociogram. Here is given a diagram of a sociogram expressing the dormitory preferences of a group of twelve boys in a home for maladjusted adolescents.

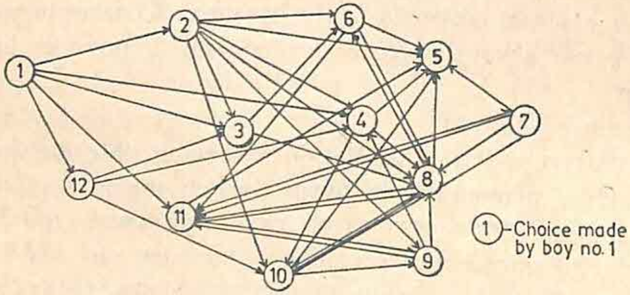


Figure. 17

---

[9] Moreno, G., Who Shall Survive, Beacon House, New York.

SOCIOMATRIX

BOY	1	2	3	4	5	6	7	8	9	10	11	12
1	·	|	|	|	·	·	·	·	·	·	|	|
2	·	·	|	|	|	|	|	|	|	|	·	·
3	·	|	·	·	·	|	·	|	·	·	·	·
4	·	·	·	·	|	·	·	|	·	·	·	·
5	·	·	·	·	·	·	·	|	·	·	·	·
6	·	·	·	·	|	·	·	|	·	·	|	·
7	·	·	·	·	|	·	·	|	·	|	|	·
8	·	·	·	·	|	|	·	|	·	|	|	·
9	·	·	·	|	·	·	·	|	·	|	|	·
10	·	·	·	·	|	·	·	|	|	·	·	·
11	·	·	·	·	|	·	|	|	|	·	·	·
12	·	·	|	|	·	·	·	·	·	|	·	·

choice given →

↓ choice received

This sociogram is also presented as a socio-metric.

We find that Boy 1 receives no choice (an isolate) i. e. no one wants him as a companion. As popular boys we find Boy 8 (a star) and 2-3, 8-10, and 7-11 as mutual friendships.

The socio-metric choice has been frequently used to find leaders in a group.

The sociogram is constructed on choice basis, but the choice is momentary. So Jennings (1947) points out that (1) choice must have particular criterion for particular work; and (2) it must have meaning.

Since 1940, attempts are being made to bring statistical accuracy in socio-metric measurements. Zeleny has devised a method introducing five points scale to measure social status. Each subject is asked to express his attitude to others as one of five degrees of intensity ranging from complete acceptance to complete rejection.

Social integration, high morale and efficiency are interdependent.

FOR FURTHER READING

Krech and Grutchfield, R.S., Theory and Problems of Social Psychology, Mc Graw Hill, New York.

Fleming, C. M., Social Psychology of Education, Routledge, Kegan Paul, London.

McDougall, W., Introduction to Social Psychology, Metheun, London.

Theodore, M. Newcomb, Social Psychology, Tavistock Publications Ltd.
Moreno, G., Who Shall Survive? Beacon House, New York.
Lewin, K., Principles of Topological Psychology, Mc Graw Hill, New York.
Vernon, P. E., The Psychological Effects of Air-raids, *Journal of Abnormal and Social Psychology,* XXXVI, 1941, pp. 457-76.

Questions :

(1) Do you think that the social standards, the customs and ideals of the groups with which an individual communicates influence his actions? Fully discuss.
(2) Briefly state the impact of attitude on social learning.
(3) It is said, 'The phase of social learning with the personally matured adult can be explained by Hull's 'reinforcement', Gestalt's 'insight', and Sherif and Cantril's 'ego-involvement'. Explain.
(4) What will be the qualities of a group leader? 'The leader is a father figure. He protects the group and rears up' — Erichfromm. Do you agree?
(5) What are the different kinds of groups? Critically examine the merits of the democratic group.
(6) What do you mean by group morale? What are the criteria of morale in groups?
(7) Write notes on Socio-metric test by psychodramatic technique.

CHAPTER XII

Mental Health of the Child: Diagnosis and Therapy

It is very difficult to define 'good mental health' and 'poor mental health. A person with good mental health may not be entirely free from anxiety but he is able to face the usual problems of life with a certain amount of confidence. He maintains his self-respect. A person with good mental health is not always free from conflict and obviously he is not always emotionally stable.

A person with poor mental health, unless the cause is organic, is usually unable to handle crises successfully and this robs him of his confidence and self-respect. Sometimes he is threatened from within and without so much that he develops serious behaviour disorder.

Sound mental health is best understood from the following points of view:

(1) Self-respect and respect for others
(2) Understanding and tolerance of one's limitations and the limitations of others
(3) Understanding the basic needs that motivate behaviour.

A person who does not love or like himself usually suffers from maladjustment. A normal individual likes himself and he feels that he is an accepted member of a social group and that the members of the social group are also liked by him.

An important principle of mental hygiene is that the realities of life must be seen clearly and to a considerable extent accepted. An individual also must accept himself as he is and should learn to capitalise on his assets and to accept his limitations.

"Human behaviour is dynamic. Every person is urged on throughout his life by desires which must be satisfied. His life is a constant struggle for food, warmth, achievement, affection, sex satisfaction, recognition and economic and emotional security. The needs of the individual and the requirtments of the society in which that individual functions are never identical, but the flexible person is able to resolve the two into an acceptable synthesis".

Mental hygiene helps in the prevention of inadequate adjustments and to the processes by which maladjusted persons are restored to normal living.

The aim of mental hygiene is to assist every individual in the attainment of a fuller, happier, more harmonious and more effective existence. Education and mental hygiene are closely related. The aim of education is all-round development of human personality. Education strives to make an individual a well adjusted being in his society. Hadfield says 'mental health is the full and harmonious functioning of the whole personality'. The purpose of mental health is almost the same as that of education.

Factors Affecting Mental Health

A high degree of emotional security is necessary for physical and mental health.

A new born infant generally begins his life in a family, and to a considerable extent, therefore, a growing child is dependent upon his parents intellectually, emotionally and economically.

A good home satisfies the child's need for emotional security. If a child is well loved and cared for, he develops harmonious personality. Normally, when a child is accepted by his parents and particularly by his mother, he develops self-confidence. Freud observes "I have found that those persons who consider themselves preferred or favoured by their mothers manifest in life that confidence in themselves, and that unshakable optimism which often seems heroic and not infrequently compel actual success'.[1] Flugel[2] found certain significant features of parent children relationships. He observes, "A stern and bullying father, a nagging or over-anxious mother will frequently produce a rebellious son or daughter.

---

[1] S. Freud, The Interpretation of Dreams.

[2] The International Psycho-analytical Library, 1843, p. 46.

The family provides the infant also with opportunities for identification with other human beings. The family circle becomes the child's universe in miniature. His experiences in this small universe largely determine his personality structure and his later *attitude* towards himself, others, and society in general. He wishes to be recognised as a responsible and valued member of the family group. The child is influenced very much by the quality of relationships with his parents. When a child is well loved and cared for, he develops a harmonious personality.

But family situations can be classified in various fashions. There are the homes in which there is an excess of affection—with over-possessive, over-solicitous or over-indulgent parents. Again, there are homes in which affection is lacking, where there is nagging, frigidity or neglect. There are family settings in which certain children are discriminated against and others in which some members are frankly rejected.

There are differences in external conditions. In some homes, there is perpetual scarcity of money. In others, there is an excess of wealth.

In homes where the mother is aggressive and dominant there is resentment and hostility against her. Where the father is over-bearing, the pattern is reversed. The reactions of the adolescent are to the behaviour rather than to the sex of the aggressor; and the resulting pattern of behaviour varies also with the motivation of the adult[3].

Parents determine the behaviour of their children by both direct and indirect influences. Direct guidance and training include conditioning, instruction and the more obvious forms of reward and punishment. Indirectly, the parents form the personality of the child by suggestions and by subtle rewards. Children are found to adopt many of the habits and adjustments of their parents. In order to bring up a child, therefore, parents must live good adjustments. The child is to be provided with opportunities to grow and with situations requiring adjustment that are within his ability to solve. Parents should guide the child to avoid some of the greatest mistakes but should not protect him from all the results of his trial and error. There should remain a cordial and confidential relationship between the parents and the child which will cause the child to seek voluntarily their counsel when he (the child) is in difficulties.

---

[3] Stranger, R., and Drought, N.,—Measuring Children's Attitudes towards their parents. *Journal of Educational Psychology*, XXVI, 1935, pp. 169-196.

The general improvement of mental health requires both parents to be well adjusted and well informed.

"Maladjustments arise as inadequate responses to the frustration of an individual's motives. This thwarting is due, in general, to an imbalance between the environmental difficulties encountered and the individual's ability to meet them, as determined by his capacities and by his habits of personality".[4]

Maladjustments are the results of a multiple causation. Maladjustment takes place when the motive of the individual is blocked by conflict with antagonistic motive. The two conflicting impulses do not cancel each other but give rise to increased tension and in turn vacillating activity. "The term conflict means", as Shaffer says, "that the individual confronts a complex situation to different aspects of which he has learned to make antagonistic responses"[5]. As the two antagonistic responses cannot be made at the same time, the tension is not reduced and adjustment is demanded. In a thwarting situation (which will be discussed later) of the environmental type the individual has no adequate habit by which to respond. In the conflict situation, he has too many habits and the adjustment must be a selection or a compromise.

The psycho-analytic theory abounds in 'conflicts'. It is held that in infancy there is a conflict between pleasure principle and the reality principle. But this combat is normally compromised by the development of a strong ego that succeeds in reconciling pleasure-demands with reality.

---

[4] L. F. Shaffer, The Psychology of Adjustment, p. 119, p. 464.

[5] *Ibid.*

If the control of the child vacillates, being strict at times and negligent at others, the child does not know what to expect and he develops no coherent standards of conduct. Again if the parents quarrel over discipline, disintegrating consequences on the child are possible.

The need for emotional security of the child to prevent frustration is to be fulfilled by the parents in early childhood. It is commonly assumed that parents always love their children. But in the parent-child relationship, rejection occurs when one or both parents fail to fulfil the needs of the child and fail to give proper love and affection.

There are, of course, a number of reasons why parents reject their children. Included among these reasons are physical appearance, marked difference in intelligence, moral standards, religious convictions and interests. If there are two daughters in the family, one beautiful and one homely, the parents may reject the homely because they feel that she does not do justice to their appearance. Sometimes again the beautiful one is rejected by the jealous mother.

If a dull child is born of brilliant parents, he is often rejected because of his scholastic inability. Again parents who are below average in intelligence will reject a child because he is too bright.

Parents who are religious in nature often find it difficult to continue to love a child who questions their beliefs.

Two methods are generally adopted by parents in rejecting a child — withdrawal and aggression. Due to withdrawal by the parents, the child is emotionally frustrated. The child is made to feel that he is unwanted and is tolerated only as a matter of duty. Parents using aggressive tactics often rationalise their behaviour and maintain that the strict discipline is imposed upon the child for his (the child's) own good. This excessive repressive discipline pre-conditions maladjustment. The child who is compelled to obey demands which he cannot understand or not do something that seems desirable or sensible to him, is being subjected to non-coordination of thought and action

At the opposite extreme from rejection by parents is over-protection which also leads to frustration and maladjustment. Frequently parents, especially mothers become over-solicitous and by cultivating dependence in their children make it difficult for the children to establish normal relationships outside the family circle. 'Freudian psychology has made much of the fixation of one's affections upon a parent. Such a fixation is frequently noted in neurotic adults. Because of it, they may have found it impossible to establish normal hetero-sexual relationships. It is a frequent cause of celibacy and is often one of the causal factors in homostxual behaviour'.

The concept of over-protection was clearly defined by David Levy. He read a paper before the Second Colloquium on Personality Investigation in 1929, and it was published in the *American Journal of Psychiatry* in 1930. According to him the factors responsible for natural over-protection are:

(1) Long period of anticipation and frustration during which the woman's desire for child is thwarted by sterility, miscarriages or death of infants.
(2) Conditions in the child that makes him less likely to survive than other children.
(3) Sexual incompatibility with husband.
(4) Social isolation.
(5) Emotional impoverishment in early life and unhappy childhood particularly from the point of view of individual's satisfaction.
(6) Development of dominating characteristics through the assumption of undue responsibility in childhood.
(7) Thwarted ambitions.

The effect of over-protection of child is varied. According to Levy, "So far, it appears that where maternal overprotection is primarily and successfully dominating in character submissive traits result — obedience, authority acceptance, dependence on others; in boys effeminacy. When primarily indulgent in character, aggressive traits result in authority reception, commanding, bullying and 'lime light' behaviour".

When a child loses one or both of his parents due to death, separation or divorce, he experiences an emotional crisis leading to marked feeling of insecurity. A large number of studies is there on the effects of broken homes on children. The results of these studies clearly indicate that a child's emotional, social and even intellectual development is likely to be affected. Torrance[6] used 514 adolescent boys as subjects. 182 out of these 514 boys were from broken homes. The broken home group showed 2.4 times as many cases of retardation as the paired group, 2.1 times as many exhibited behaviour problems. He pointed out that the boy whose parents are separated or divorced is likely to have more problems than the boy whose parents are dead.

The need for achievement comes next. This need for achievement must be frequently satisfied to make an individual well adjusted, otherwise if the need is completely or for the most part frustrated for a long period of time the individual will become maladjusted.

Individual differences should not be overlooked. Success in achievement must always be defined in terms of the goals that the individual has set for himself. These goals should be selected in the light of the abilities of the individuals. An ambition, quite reasonable for one may be quite unreasonable for another. That which is possible for an intellectually superior individual to achieve may lead to frustration for the dull individual.

Adjusting to Frustration

When the satisfaction of a motive is thwarted, frustration takes place. This thwarting is generally the result of external (environmental) conditions as it may be internal arising out of the mental and emotional state of the individual. A more serious threat to the personality development of the individual is create considerable emotional tension with accompanying be- represented by internal frustrations. The internal frustrations haviour disorders.

Frustration often results in aggression. This aggression is directed toward the person or persons who have caused the frustration. It may also be turned inward against the self. A normal method of maintaining self-esteem when frustrated is by direct aggression. Psychiatrists have developed an interesting diagnostic procedure in their work with young maladjusted children. The child is given a family of dolls to play with, the number of dolls being the same as the members of his immediate family. The experiment of John Dollard, N. E. Miller etc. on frustration and aggression is very interesting. Aggression toward one's self can, however, be carried to such extremes that the self is destroyed — psychologically as in schizophrenia or physically as in suicide.

---

[6] P. Torrance, "The Influence of the Broken Home on Adolescent Adjustment'; *Journal of Educational Sociology*, 1946. XVIII. pp. 360-361.

Maladjusted Children and their Symptoms

The habits of adjustment that fail to satisfy the individual and social needs are maladjustments. It is a fact that when an individual is motivated toward a goal which he cannot achieve, he resorts to one or more adjustment mechanisms. When frustration is experienced, in order to maintain his ego, he makes use of adjustment mechanisms. These are adjustments by defense, by withdrawing and adjustments involving fear and repression.

It is often found that persistent and intense defensive behaviour is usually caused by a general attitude of inferiority on the part of the individual. Any variety of inferiority — physical, mental or social — may cause to thwart the attainment of motives and severe attitudes of inferiority arise from defects upon which social approval most strongly depends.

The defence mechanisms adopted by the individual in respect to adjustment are not deliberately acquired by him but for the most part they are unconscious. In a process of trial and error the individual discovers that some responses reduce his tension and give relief. These lead to behaviour disorders only when carried to extremes.

The principal adjustive mechanisms are: Compensation; Identification; Rationalisation; Negativism; Day-dreaming; Regression; Repression.

Compensation as an adjustment mechanism may be defined as the exaggeration of a desirable trait to reduce a feeling of inferiority caused by an undesirable trait. Some psychologists believe that in compensation extra effort is put forth by an individual to achieve along lines he is most defective in. Demosthenes utilised the mechanism of compensation when he forced himself to become a great orator inspite of an early speech defect. Compensatory behaviour is more or less based upon feelings of inadequacy. These feelings of inadequacy, however, are not always caused, as Adler believes, by physical defects. A college student when he feels himself inferior because his need for status has been frustrated, may compensate for that feeling of inferiority by boastful talk. Many failing students in colleges have been driven to seek a higher education for which they are unadapted because their parents seek compensation in the attainment of superior educational and economic status by their children.

Identification is a defense mechanism and is related to compensation and to fantasy. It is a method of tension reduction through the achievement of other persons or groups and in some cases through the merit of inanimate objects. The infant identifies himself with his mother; a growing boy draws heavily upon his father's strength. The members of the family of a famous man often identify themselves with him to increase the feeling of their own importance. Identification, is however, dangerous to the mental health of the individual when it is carried to the extreme due to excessive attitudes of inferiority.

Rationalisation is a form of defense in which an individual gives socially acceptable reasons for his behaviour. Shaffer points out that at the 'back of every rationalisation are the strong motives such as mastery, social approval, and sex which are not ordinarily owned or recognised'. A child easily finds out that if he can think up a reason for his behaviour that would be satisfactory to his parents or to his superiors, he escapes punishment. A student fails in examination. Instead of admitting that his intelligence or ability was inadequate to the task and that he could not prepare himself thoroughly for the examination, he argues that the questions in the examination were unfair or he was not feeling well.

Sour grapes mechanism is a form of rationalisation. An individual being unable to obtain what he wants, maintains that he did not want it any way. He thereby adjusts to frustration and denies the existence of any desire to attain the original goal.

Negativism is an aggressive withdrawal. A negativistic person strongly resists suggestions. When withdrawing is actively shown as refusal, stubbornness, contradictory attitudes and rebellion against authority, it is designated negativism'. Regarding the origin of negativism, Shaffer[7] says, 'It is quite evident that negativism is a non-adjustive emotional response of the rage type, closely related to temper-tantrums. Its original stimulus seems to be an interference with the self-initiated activity of the child, which at first results in the violent emotional manifestations of rage. The motor aspects of the rage response become inhibited by training and by fear of punishment, but the emotional mood remains. Negativism is thus the last emotional resort in situations involving restraint, interference or injury, and may persist in later life as a response to inferiority and insecurity'. One brilliant student found it difficult to take examinations. A glance at the questions aroused a feeling of rage in him. Even though he knew most of the answers, he did write very little or nothing at all, threw the answer scripts on the instructor's desk and left the examination hall. Afterwards he wondered why he had behaved in that manner for he really wanted to make a good scholastic record.

Day-dreaming is the imaginary representation of satisfaction which cannot be attained in real experience. It is an escape from the difficulties of real life into a realm where all obstacles to success can be ignored or surmounted. It gives relief from frustration and conflict. It is pleasant but it becomes deterimental when indulged in excessively. When an individual fails to satisfy his needs in real life, he turns to day-dreaming. It is, however, found that in the fixed stage of maladjustment, fantasy is selected as the principal means of satisfaction and is used to the exclusion of more active adjustments.

If in actual life frustrations persist for the individual, he may learn to depend more and more upon artistic thinking.

---

[7] Shaffer, L.N. Psychology of Adjustment, p. 185.

From this may develop hallucinations and eventually, perhaps, schizophrenia. He at this stage fails to differentiate between the real and the unreal. It is not untrue that the most important reason for the selection of fantasy is usually a lack of the opportunity to make the more active varieties of adjustment.

The commonest form of day-dreaming is the 'conquering hero' type in which the individual pictures himself doing the deeds that he most desires. The contents of day-dreams vary with age and experience. The normal person in day-dreams does not confuse fantasy with reality.

Another type is death or destruction day-dream. In this, the death of some one who stands in the way is imagined. Sherman's 'systematic' fantasies are repeated and consistent in nature and the dreamer imagines the same sequence again and again and they are more likely to indicate the personality traits of the individual.

Fantasies are valued as it is held that all day-dreams are not maladjustments — they may serve constructive as well as adjustive purposes. 'A world without fantasy would be one without music, literature, painting or drama, and therefore a much less pleasant place in which to live'. It is desirable to so arrange matters for one's self and for others, that greater satisfaction comes from real achievements than from day-dreams.

Regression is a form of adjustment of the individual which involves a retreat from the complexities of the present to an earlier and simpler form of behaviour. When the individual is incapable of overcoming the difficulties in his immediate situation, he takes recourse to this mechanism of retreat.

This desire to regress is present in every one but this is affected by the factor of selective forgetting. Middle-aged adults think of their childhood as being much happier than it actually was.

The person who resorts to the mechanism of regression is introverted, lacking in self-confidence. He finds it difficult to make new friends and to adjust to new situations of life. For want of confidence in himself, he avoids new experiences.

In serious cases of regressive behaviour the individual loses touch with reality and believes that he is once more a child.

Regression is a form of adjustment by which the individual controls his thoughts and experiences that are in conflict with his standards or frame of reference and forces them to sink into the unconscious. The individual by repression tries to forget the experiences that he considers to be wrong or sinful.

Repression is an unfortunate adjustive mechanism. It gives no opportunity for the reduction of emotional tensions aroused by situations. On the other hand when a tension is aroused in connection with a repressed experience, reduction is not achieved and the individual remains in a tense emotional state. It is rather tension-producing than tension-reducing. Repression leading to inhibition creates tension whereas expression could relieve it. Direct repression is the most harmful of the mechanisms of adjustment.

Diagnosis

In order to treat the adjustment problem, it is necessary to know a great deal about the individual's past history, present environment and adjustive attitudes. Before any effective course of treatment is followed, it is necessary to obtain information about the individual and to make hypothesis regarding the origins of the characteristics of the maladjusted individual to be modified.

The data should be integrated and selected before interpretation. The sources of information may be of two classes — the objective information to be obtained from sources other than the individual and also the data obtained by talking with the patient himself. The outside data (objective) are gathered by indirect examination of the case history. The 'inside' facts are acquired by direct examination including interview, psychological measurements and the physical examination.

The case history of an individual contains a description of his environment and background. The method of case study is a contribution to psychology from the field of social work. Since the personality and behaviour of an individual largely depend on the individual's past experiences and adjustments, the value of the developmental history is immense. The chief sources of information in this regard are interviews with the parents of the subject and with other members of his family, his teachers and his associates. It is better to gather much information than too little.

Direct Sources of Information

Physical Examination: For assisting in the study of personality usual observations concerning the skeletal, muscular, digestive, respiratory, circulatory, excretory, reproductive and nervous systems are necessary. Special attention should be paid to the possible direct organic causes of maladjustment including neural diseases and injuries, drugs, toxins and the functioning of the endocrine system. The physical examination discriminates between ailments that have organic causes and those that may be historical in nature.

Psychological Examination: It will furnish evidence concerning the abilities and accomplishments of the individual. The psychological examination of course varies with the problems to be studied. In the case of adults with difficulties in some aspect of personality adjustment, mental tests may be omitted, but with children whose lack of school progress is a factor, the mental testing programme should be elaborate.

The Interview: The direct psychiatric or psychological interview with the patient is the most significant procedure employed in the mental hygiene case study. From the individual himself can be understood his motives, attitudes, emotional trends and adjustments etc. Interviews are both diagnostic and remedial. These two functions of interviews are inseparable in practice.

The aim of the diagnostic interview is to get the individual reveal the significant facts about his personality and his adjustments. The first task of the interviews will be to establish rapport with the subject. This rapport implies a condition of confidence, trust and friendliness. The interviewer should also know something in advance of the characteristics of the subject and might begin by asking him about matters in which the subject is interested. The interviewer also must be a well adjusted person himself. He should be friendly, cordial and genuinely interested in the individual and his problems. The questions generally should arise from the issues suggested by the case history. The common causes of maladjustment such as family circumstances, so called relationships, economic troubles and love and sex relationships etc. are to be discussed. During interviews the interviewer should spend more time in listening than he does in talking.

When during interview the subject fails to give a clear account of his behaviour because of repression, lack of insight. certain modifications in interview techniques will be required. These modified methods are often used by the psycho-analysts. One psychoanalytic method in studying personality is 'uncontrolled free association'. The patient or the subject is allowed to lie in a couch, close his eyes and relax as much as possible. He from his memory and association narrates his experience, emotional attitude relating to maladjustment. He is also instructed not to withhold expressing anything no matter how petty or irrelevant, how painful or shameful it may be. The interviewer listens silently and occasionally encourages.

DREAM STUDY: In dreaming either the events of the immediate past or the problems, conflicts and unfulfilled aspirations are ruminated by the individual. Dreams cannot be interpreted easily without other knowledge of the personality and experiences of the dreamer. Dream interpretation cannot be done by any fixed interpretation of the symbols as did Freud. By free association and by response to questions by the interviewer, the subject himself unravels the meaning of the dream under the guidance of the interviewer.

FANTASY APPROACH: After the establishment of a cordial rapport, the child is induced to make up a story often starting from a picture, a fairy tale or some aspects of play. Children's fantasies are likely to reveal their attitudes, beliefs and trends of personality. The technique of play observation may also yield suggestive indications.

The diagnostic aims of all interview techniques are to obtain a complete history of the individual and to find out his persistent habits of behaviour, of thought and of emotional response.

Diagonsis in one word is not the labelling of the individual or of his problem. The value of designations as 'Compensation', 'Negativism', 'Hysteria' is that they serve in the place of long descriptions of those forms of response. The diagnosis includes statements of the aims of treatment, the procedures to be employed and an estimate of the prospect of success.

Therapy

The treatment of maladjustments presents two fundamental tasks. One is to remove the particular inadequate behaviour that is the evident cause for seeking clinical assistance. This can be done not by treating the symptoms but by redirecting the entire present adjustive scheme of the individual. The second task is to modify the broader characteristics of the individual's personality and to improve his habits of adjustment.

It is very difficult to make general statements about the treatment of maladjustments. It is obvious that the course of treatment suitable for aggressive compensatory behaviour would be very different from that which is suitable for phobia and this again is different from that suitable for hysteria. Again, a state of hysteria may arise from many different causes. Because of these considerations, the same methods of treatment will not work for all.

The most generally suitable technique of treatment is psychotherapy. The expressive method in psychotherapy is called Catharsis, which means 'to purify'. Maladjustments develop from emotionl tensions. These tensions either lead to defence mechanisms or to non-adjustive responses such as anxiety or nervousness. The causal stimuli being discovered, their verbal repetition may extinguish the undesirable response. In the course of telling his difficulties the subject often makes adequate emotional response which was inhibited. The process of expression therefore is tension reducing. This is often known as release method.

Advice and suggestion for the guidance of the individual's readjustment no doubt play an important role in treatment. It is often found that maladjusted persons, especially hysterics, tend to be more suggestible than do those who are balanced and adjusted. Suggestion is very much effective in close personal relationships between the clinician and the patient.

Psychotheraphy is generally known as re-education. Another good method of environmental treatment is placement. Placement generally means putting the youngster in a normal foster home. Selection of a suitable and desirable foster home is therefore very important.

Psycoanalysis and Play Analysis

The basic and fundamental concept of psychoanalysis is that every individual possesses a store of vital energy which is called *libido*. 'The strength of this vital energy, its nature and the channels into which it flows are the prime factors in determining personality and in distinguishing between normality and neurosis'. Freud holds 'libido is the force through which...... ....the sexual instinct expresses itself'. It includes all sorts of pleasure seeking activities and does not apply only to the genital organs or to the reproducing process.

The libido is dynamic as it is 'live' and it flows inward and outward.

The realm of mental life is divided into three parts — the conscious, the preconscious and the unconscious. The conscious consists of that mental content of which the individual is aware. The preconscious is that part of the mind the contents of which can be raised to the conscious level by association of ideas. The unconscious is the best known concept in the Freudian theory. The unconscious is the longest part of mind. The content is not logically arranged. Emotion, desire and instinct predominate in the unconscious rather than ideas. The unconscious content comes from that which has been repressed from the conscious and that which was never conscious. According to Jung, that which was never conscious, is the racial unconscious, the remnants of the mind of primitive man.

Id, Ego and Super Ego

The Id is the entirely unconscious, striving aspect of personality and is the original seat of libido. It is guided by 'pleasure principle' seeking gratification and avoiding pain having no connection with the reality except through the mediation of the Ego.

The Ego is partly conscious and partly unconscious. It is governed by 'reality principle' and is rational and perceptual. The function of the Ego is to repress the urges and push them back to the Id. The Ego controls the primitive instincts and grants satisfaction to the Id when the instinctive urges are judged to be harmless.

Super-Ego consists of inherited moralities and taboos and also the moral notions acquired by the child. The main function of the Super-Ego is criticism. As it is largely unconscious, it is more aware of the Id's immoral impulses than is the Ego. Super-Ego compels the Ego to repress the tendencies of the Id. The Super-Ego fights with the Id and the Ego is the battle ground. It corresponds to the notion of 'Conscience'.

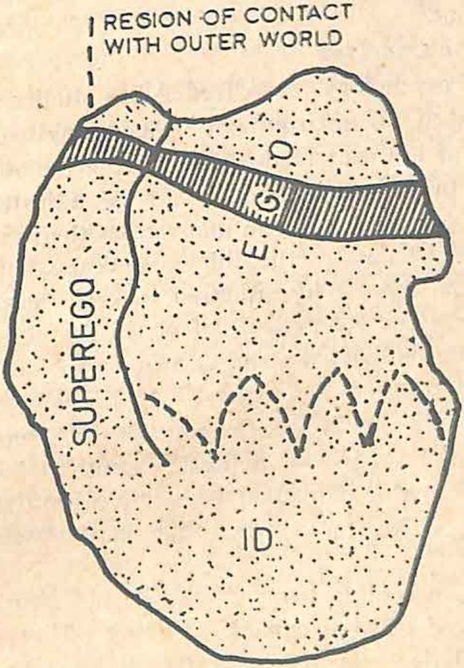


Fig. 18. The Psychoanalytic view of the personality

Hadfied[8] observes, 'Our behaviour is complicated by the fact that as often as not our acts are determined by motives of which we are entirely unconscious, this being partly due to the fact that the earlier modes of behaviour like the trop'stic or reflex action are themselves unconscious and automatic...............the higher phase in order to establish itself, often refuses to admit the operation of a lower and represses it out of consciousness. There are a thousand things we do every day, but do not know why we do them. It is inevitable that, there should be clash between these various phases of development.'

The psychologists in order to bring a compromise between the content of the Id, both innate and repressed on the one hand and the demands of reality on the other, speak of Dynamisms. (These have been described as Defence mechanisms already). Dynamisms are therefore the means by which the Ego deals with three adversaries — the Id and Super Ego within and the external world without.

Variants of Psychoanalysis

'Individual psychology' of Alfred Adler studies the individual in relation to his environment. According to Adler the principal force of life (not libido) is a striving for superiority or self-assertion. In normal individuals this is adjusted to reality to a reasonable satisfaction but in many cases the urge of superiority is thwarted because of the child's weakness and the omnipotence of his parents. This situation is sometimes aggravated by the presence of actual pysical defects in the child. In such circumstances, the individual acquires an unconscious 'inferiority complex'. This inferiority complex gives rise to over-compensation. Adler does not believe in conflicts as Freud did. He rather finds that the origin of neurotic symptoms is in the present conflicts that the individual is facing with the world for the attainment of his goal, rather than in repressed infantile conflicts.

The treatment is educative. Fictional goals must be broken down and replaced by aims capable of being achieved.

Jung's 'analytical psychology' differs much less from that of Freud. Jung differs from Freud concerning the nature of 'libido'. According to Jung libido is a general life urge from which spring all activity. It is in part sexual and in part moral and anti-sexual. The concepts of 'extrovert' and 'introvert' are regarded by Jung as designating inborn personality types.

---

[8] Hadfield, J. A., Psychology and Mental Health. pp. 26-27.

Jung's therapy consists in restoring the wholeness of personality, which process is known as 'psycho synthesis'.

Evaluation of psychoanalysis

(1) An important contribution of psychoanalysis to psychology is its role in bringing psychology to a realisation of the problem of 'behaviour adjustment'.

(2) It shares with psychology in upholding the concept of 'causal determinism'. Both agree that all behaviour is caused and that the causes may be determined if we know enough of the past history of the individual.

(3) It influences psychology to accept the genetic approach in understanding the problems of personality and of the neurosis.

(4) Both agree on the importance of childhood.

(5) Though the psychoanalytic concept of 'the unconscious' has no place in objective psychology, the notion of the non-deliberate determination of behaviour is accepted in psychology.

(6) Psychology no doubt is indebted to psychoanalysis for the idea of the sexual basis of several adult neurosis.

Dr. H. J. Eysenck, however, in *What is wrong with Psychoanalysis?* holds that (1) The psychoanalytic conclusions are based on unreliable data. Its data are introspections (of the analyst) and therefore present special difficulties to the scientist. As Wittels admits in his biography of Freud, "Freud's specific method of investigation............was not suitable for setting up boundaries and strict definitions. Through insight into himself he came to understand a psychological phenomenon, and from the beginning his discoveries carried a strong inner conviction of certitude". (2) Psychoanalysts over-generalise their conclusions. (3) Psychoanalytic arguments from facts beg the question.

Let us turn to the preceding argument that broken homes cause neurosis, and let us assume that it had been established beyond doubt that broken homes were more frequent in the histories of neurotics than in the histories of non-neurotics. To argue from this that the broken homes were in any way responsible for the subsequent neurosis would be a clear example of an ancient logical fallacy, namely, that of the *post hoc, ergo propter hoc* argument. To the statisticians, this fallacy is known as 'arguing from correlations to causes'.

Play therapy

Psychotherapy, as it has been seen, includes all psychological or mental methods of treating behaviour disorders. It is a learning situation in which the individual is provided with opportunity to make corrective adjustments in his perception of himself and of his environment. Greater emphasis is placed upon the emotions than upon the intellect. In psychotherapy, the total personality is the object of concern and each personality has its own unique experiential background and unique reactions to enviroment.

Projective techniques are used in diagnosis and therapy when it is found that truthful responses are not being available due to confusion and repression. The individual may not be able to talk about the conflicts which disturb him most because of repression and catharsis is not possible. In these cases free association writing, finger printing, drawing, thematic apperception, play methods are in use.

We have already discussed that when some children fail to verbalise even to make a fantasy, the technique of play-observation yields suggestive indications.

It is through play that the child expresses himself freely and spontaneously. A child fulfils his life's desire and ideas through play. Play reflects even a child's conflicts, sorrows, anger and annoyance. Play therapy creates opportunities for the expression of the emotional tensions of children. "Play therapy is based upon the fact that play is the child's natural medium of self-expression. It is an opportunity which is given to the child to play out his feelings and problems just as in certain types of adult therapy, an individual 'talks out' his difficulties"[9]

[9] Axline, W. M., Play Therapy.

The therapists provide the children with toys such as blocks, hammer and pegs, toy vehicles and other materials suited to the ages of the children and allow them to play with the materials freely and observe the children. A good rapport should be established between the observer and the child, when the observer may note the directions of the child's aggressiveness, his dependence, his curiosity and his inhibitions.

Psychiatrists have developed an interesting diagnostic procedure in their work with young mal-adjusted children. The child is given family dolls to play with. There is the father doll, the mother doll, brother doll, and the sister doll. If the child has been frustrated by his father, he will manifest his resentment by aggressive behaviour toward the doll which represents his father and so on.

It is admitted by the psychiatrists that it is more dangerous for the mental health of the individual when the aggression is turned inward.

Dollard and his co-workers[10] in their research on the frustration aggression hypothesis arrived at some important conclusions given below:

(1) The strongest instigation aroused by a frustration is to acts of aggression directed against the agent perceived to be the source of the frustration and progressively weaker instigations are aroused to progressively less direct acts of aggression.

(2) The inhibition of acts of direct aggression is an additional frustration which instigates aggression against the agent perceived to be responsible for this inhibition and increases the instigation to other forms of aggression.

(3) Since self-punishment is necessarily involved, aggression turned against the self must overcome certain amount of inhibition and therefore tends not to occur unless other forms of expression are even more strongly inhibited. If the amount of inhibition of various acts of aggression is held relatively constant, the tendency to self-aggression is stronger also when the

---

[10] John Dollard, N. E. Miller, Frustration and Aggression (New Heven: Yale University Press, 1939).

individual believes himself, rather than an external agent, to be responsible for the original frustration.

(4) The expression of any act of aggression is a catharsis that reduces the instigation to all other acts of aggression.

The play therapy is useful to gain rapport and it opens the way to a discussion of problems that at the beginning the child will not express in any other way.

The Unconscious

The unconscious, according to Freud, occupies the major portion of the mind. The individual is unaware of these mental processes (unconscious) but his behaviour is being influenced by these unconscious mental processes.

The unconscious is dynamic in nature and it is predominantly emotional. The unconscious contains the desires which are repressed from the consciousness, and that which never become conscious.

Owing to this repression there is always a duality in the personality, which is divided against itself. This duality in the personality accounts for many inconsistencies of character.

Due to constant repression by the 'censor' the expression of the unconscious desires is hindered and the unconscious desires are forced to turn back upon themselves and 'like a river which has been dammed, form a kind of swamp in the unconscious which is called a complex'. The complex is responsible for many kinds of mental and nervous diseases and in extreme cases leads to behaviour disorders. "A man's tastes in arts or beliefs about religion are just as much determined by the trends of his unconscious self as his taste in female beauty or his beliefs about his own character.[11]

The psychoanalytical concept of the development of personality is very interesting and it is based on the libidinal localisation and attachment to objects.

In the first stage, that is, in the period from birth to the age of five or six years of the child, the libido is localised in three different regions of the body. The first region of the body is the mouth. This is the *oral-erotic* stage when the infant gets libidinal satisfaction in nursing and thumb-sucking and then in biting and chewing. In the next stage is the *anal-erotic* stage (from infancy to puberty) when the eliminative function and organ become the centre of satisfaction. "The anal stage is displaced by the early *genital* stage, when the pleasure-giving possibilities of the sex organs are discovered and utilised.[12]" This is the final stage of localisation of the libido.

---

[11] Joad, C. E. M., *Guide to Modern Thought*, 1941.

The infantile progress in *object finding* passes through three stages. The first stage is auto-erotic. During this stage, the libido is attached to no object but is gratified only by purely organic pleasure. The second stage is self-love or *narcism.* The primary narcism gives strength to the Ego and persists throughout life. The ego-centric character of an individual results from fixation at or repression to the narcistic level. The third stage of libidinal attachment is in the stage of object finding by the libido, and is called the object choice. Libido tries to attach itself to an external love object. This happens almost at the same time when the genital stage of libido localisation takes place. Parent attachment introduces the problem of the Oedipus complex. The libidinal attachment of the boy is first directed towards his mother. The Oedipus complex represents the boy's unconscious desire for incestuous sexual union with his mother. The solution of the Oedipus involves the *sublimation* of the feelings towards the mother into tender affection, and identification with the father so that his achievements come to be regarded as the child's own.

The personality development of the girl presents more difficulties. In the girl, the castration complex precedes the Oedipus complex. The girl discovers her genital inferiority to boys. For this lack she blames her mother and the girl turns to father love and finds in him a compensation for her lack of maleness. She forms an unconscious desire to bear the father a child. It is of course solved by identification with the mother and sublimated feelings toward the father.

---

[12] Shaffer. L. F.. The Psychology of Adjustment. p. 399.

READING LIST

L. F. Shaffer, The Psychology of Adjustment.
Herbert A. Carroll, Mental Hygiene — The Dynamics of Adjustment.
J. A. Hadfield, Psychology and Mental Health.
Eysenck, H. J., The Scientific Study of Personality.
C. M. Fleming, Adolescence.
Dorcus and Shaffer, Text Book of Abnormal Psychology, Chapter 12.
Symonds, Diagnostic Personality and Conduct.
Woodworth, Contemporary Schools of Psychology.
Howard and Patry, Mental Health.

Questions

(1) Briefly describe the chief similarities and differences among the view-points of Freud, Adler and Jung. Which is most nearly related to objective psychology?
(2) Criticise the psychoanalytic theory and give your opinion.
(3) Comment on the modified interview techniques like free association, dream study and play observation.
(4) Explain the values of the expressive methods of psychotherapy. Why does catharsis accomplish results?
(5) How can parents rear their children according to principles of mental hygiene and yet love and enjoy them?

CHAPTER XIII

Some Basic Problems of Mental Hygiene

The aim of mental hygiene as has already been stated is to create a kind of personal and social environment which promotes sound mental health. This sound meneal health includes : (1) self-respect and respect for others; (2) understanding and tolerance of one's limitations and the limitations of others; (3) understanding of the fact that all behaviour is caused; (4) understanding the basic needs that motivate behaviour.

Self Respect and Respect for Others

A mentally healthy person *likes* himself: on the other hand, a strong *dislike* of one's self is a typical symptom of maladjustment.

A normal individual feels that he is an accepted member of of a social group, that he is liked by the members of that group and they in turn, are liked by him. A maladjusted person on the other hand reacts differently. He says that he has had no real friends and that he has times when he hates himself. "Mental hygiene emphasizes building up rather than tearing down another's ego. It stresses tolerance and praise as opposed to blame and punishment, the positive rather than the negative approach; it respects the dignity of the individual. It is found that loss of self-respect causes the great majority of emotional disorders and self-respect thus prevents maladjustments.

Another most important principle of mental hygiene is that the realities of life must be seen clearly and to a considerable extent, accepted. He must face the reality as it is and should learn to adjust to the conditions of his external world. He must also accept himself as he is. The well adjusted person should accept his limitations.

'Know thyself' is sound mental hygiene, though difficult to achieve. It is more difficult to know others and the facts of individual differences make the situation extremely complex. But a person of good mental health who respects and accepts himself usually respects and accepts others and does not reject a member of his family or friends because of differences in behaviour or points of view.

Behaviour is caused and determined. The mental hygienist knowing that behaviour is caused, never blames an individual. He never criticises a person if he is neurotic as a doctor never criticises a person suffering from cancer. The psychological study requires that the behaviour problem is treated objectively.

A person is responsible for his acts as he is a composite of his physical organism and experiential background. Every behaviour has a reason. Sometimes the reasons are vague and confused and in that case behaviour is equally vague and uncertain; sometimes the meanings are extremely clear and definite It is a fact however, that everything we do seems reasonable and necessary at the time we are doing it. It is possible that when we look at other people from an external, objective point of view their behaviour may seem irrational because we do not experience things as they do.

Mental hygiene also requires understanding and appreciation of the fundamental needs of human beings. Organic needs are inherited but these needs are satisfied by the individual being conditioned by the culture in which he lives. Human behaviour is dynamic. Every individual throughout his life is urged by desires which must be satisfied. Man's life is a constant struggle for food, warmth, affection, sex satisfaction, recognition and economic and emotional security. "The needs of the individual and the requirements of the society in which that individual functions are never identical, but the flexible person is able to resolve the two into an acceptable synthesis." Man seeks peace of mind, but he knows that he will never achieve it completely. He recognizes and accepts the facts of emotional conflict.

Mental hygiene and Education

The aims of education and of mental hygiene should be the same, namely the development and training of the individual for effective living in the social environment. It has been generally accepted that the most important outcome of education is the general habits and attitudes that make the individual better able to attack his life problems, rather than the specific skills and bits of information that he acquires. The responsibility of the school does not end in intellectual training of the child. The child comes to school as a whole and it is not possible to separate his intellectual functions from his motives, emotions and social adjustments.

It is found that a conventional school thwarts the pupil's needs and causes a destructive influence, whereas it should be an integrating and adjusting one. A good number of maladjustments show their first symptoms in school situations. The pupil fails to learn to the extent of his ability, he develops day-dreaming and truancy. But it is wrong to consider that the school is the sole cause of these conduct problems, though it may be a contributing factor in many. The school has two responsibilities for mental hygiene. One task is to purify itself of practices that cause maladjustment to the pupil and to organise for the detection and remedy of undesirable traits among its students. These are negative virtues. The greater need is to make education a positive and constructive experience that will prevent maladjustments not only in schools but throughout the life of the student. In a word, all of the functions of the school including 'instruction', 'discipline', 'promotion', 'educational and vocational guidance,' may be made to contribute to these ends.

The Hygiene of Instruction

It is a familiar case with the teacher, whether in the elementary grades, in high schools or in college that a student seems unable to learn a certain subject in spite of adequate mental ability. Scolding, low marks and even a sincere attempt to find out the cause — all appear ineffective. Some of the desabilities may be due to habit defects of an entirely educational nature. They can be analysed by diagnostic tests — and may be cured by remedial training that is directed toward the inadequate habits. It has been found that considerable progress has been made in devising diagnostic and remedial procedures for the basic subjects such as reading, handwriting, arithmetic and spelling.

In high schools and colleges, scholastic disabilities may be due to a lack of knowing how to study. This may be cured by re-training.

The remedy of subject disabilities may be a useful tool of mental hygiene for this subject disability frequently leads to attitudes of inferiority and other general maladjustments.

Another class of school disability in relation to a subject is caused by emotional conditioning. Sometimes a pupil finds difficulty in his first contact with a subject which is met with scolding. In this case fear-conditioning occurs. Moreover lack of success in a subject or in school work may cause criticism and punishment at home and this is interpreted by the child as a deprivation of parental love. But this occurs mostly in the cases where the child is over-dependent on his parents.

For re-training a child whose school disabilities are due to emotional maladjustment, the following steps may be taken:

(1) Criticism and punishment for failure must be discontinued and praise for accomplishment must be given. The study of the subject must be begun under the guidance of a sympathetic teacher. Gradually, the fear responses will be extinguished by associating the school subject with pleasant and tension-reducing situations instead of with frustration. When the school disability becomes bound up with serious problems of personality and adjustment, then a thorough clinical study and psychotherapy can relieve it.

(2) Aims of mental hygiene are promoted more by preventing school disabilities than by remedying them after the damage is already done.

(3) The dull children who "deserved" reproof the most were most favourably affected by praise.

(4) The competitive nature of school marks is not hygienic.

A better procedure will be to have each pupil compete with his own past record and strive to improve rather than to surpass his fellows. If each student can be made to feel some measures of success, negative attitudes towards school subjects can be avoided.

Posive Contributions of Instruction to Mental Hygiene

The scool should arrange to provide experiences that improve the general adjustive habits of pupils. The pupils should understand their own aims and conduct and should develop emotional control and problem-solving attack on personal difficulties.

It was supposed that the doctrine of mental discipline would be of great help to mental hygiene. The study of subjects like arithmetic and gometry increased the ability to reason in life situations.

Experimental work however does not justify the doctrine of mental discipline. A large amount of practice in arithmetic reasoning may cause very little improvement of the ability to reason in non-arithmetical problems (Winch 1922). Thorndike rightly holds that there is no perceptible relationship between the difficulty of a subject and the general intellectual gain that may result from studying it. Further studies offer a more hopeful outlook for the training of general qualities of character and personality. It is now believed that a general characteristic can be improved through school instruction, provided a deliberate effort is made to show the student the real-life applications of the trait being practised.

Conventional teaching of the subjects for their own sakes will not bring the results needed for the development of personality. When primary attention is paid to the learner and his needs, when the school subjects are regarded as tools for the development of individuals, only then instruction can contribute to mental hygiene.

It is found that the development of a well-balanced personality is more important than learning of soon forgotten subject matter. The modern educators (at least some of them) have abandoned the conventional curriculum entirely and have turned to a type of school organisation designed for the adjustment of the pupil.

The Hygiene of Individual Differences

One of the very important causes of maladjustments in school is the discrepancy that may exist betweeen the abilities of a pupll and what is demanded of him. This maladjustment is due to the inflexible character of the conventional school which requires that every pupil shall study the same curriculum in the same way and the attainment of all is measured by the same standard. There remains always a number of pupils who are unable to keep up to average attainment because of relatively unmodifiable limitations of intellect or because of drawbacks in their cultural environment. The conventional schools subject them to continued failures and compel them to repeat grades. This creates educational inefficiency and economic loss and also develops attitudes and habits, destructive to good personality adjustments. Sometimes these pupils develop negativistic attitudes and take recourse to anti-social behaviour.

It is not always true that mental dullness itself is the cause of misbehaviour. More or less it is certain now that the conduct problems arise only from the way that the school treats the dull pupil. When a pupil fails to get satisfaction in achievement, he may seek it by behaviour involving cheating, lying, stealing or truancy.

The pupil of superior intelligence is also educationally maladjusted in the conventional schools. Compelled to sit through lessons that bore him, the gifted pupil may resort to day-dreaming and develop habits of seeking unreal satisfaction.

Mental hygiene prescribes greater need for the differentiation of instruction according to ability. Various methods are used to accomplish this end. One method is to place the pupils in sections according to ability. Another system is to give instruction in the fundamental subjects in which ability differences are most notable, by means of individual drill material, each pupil progressing at his own rate.

Adequate provisions for individual differences in schools and colleges help in the development of effective, socialised and well balanced individuals.

The Hygienne of Discipline

A disciplined person is one whose actions are controlled and integrated and who is able to exert his efforts purposefully and with a self-directed orderliness. An important purpose of education lies in the development of a truly disciplined individual and it is also valuable for mental hygiene. "The training of independence of action, of insight into conduct, of a problem solving attack on difficulties, all contribute to discipline as properly conceived." These objectives can be achieved only through self-initiated or adjustive activity on the part of the pupil by which he learns to satisfy his motives directly.

But 'discipline' is used unfortunately in the sense of orderliness repressively imposed by authority and in the extreme sense it becomes synonymous with "to punish".

A student who is keen to complete a well motivated task does not have time to be disorderly.

It is found that the provision of a perfect curriculum does not eliminate all conduct problems and there are at least some pupils who persistently show misbehaviour of greater or lesser degree. Such students should be considered as maladjusted. Unruly conduct is generally a symptom of compensation for inferiority, cheating is a means of adjusting to lack of success.

A good teacher requires to be extremely resourceful in problems of conduct.

For serious conduct problems, clinical assistance is necessary.

The Teacher's Adjustment

The quality of the school's influence for mental hygiene is determined to a great extent by the personal characteristics of teachers. The social relationship between teachers and pupils helps in the development of attitudes and habits of adjustment in the pupils. Teacher's attitudes and personal traits are very important. Often the sarcastic and critical comments from the aggressive teachers affect the mental health of the pupils. Again, the teachers who appeal to the class for sympathy, who try to win approval by granting special favours or who shower affection on one or few pupils, neglecting the rest of the class, naturally cause obstruction to good adjustment of the students.

It cannot be denied that many adjustive difficulties of teachers arise from common causes. The teaching profession provides some special situations that make it hard for teachers to remain well balanced. The low salaries and unesteemed satus of teachers also are responsible for an attitude of inferiority. Unmarried teachers away from home frequently live in rooming houses and do not have the integrating influence of home life and of social outlets.

The personality handicaps of teachers are remediable. (1) All teachers should make a critical analysis of their own behaviour from the point of view of mental hygiene. (2) The teacher must be well conversant with the subject matter of teaching and improvement in competence helps in maintaining adjustive attitudes (3) Supervisors influence very greatly the personality adjustments of the teachers. Reprimands and orders are not effective for a maladjusted teacher — a cordial relationship is needed (4) A psychiatric service for teachers in the school health department would enable the maladjusted teacher to regain mental health. (5) The teacher of the future must be as much a specialist in mental hygiene as in subject matter or method. (6) Teachers must be exceptionally well-adjusted persons themselves. Before the selection of teachers, physical examination and educational attainments tests as well as psychiatric examination will be required. (7) Emotional balance and adaptability and integration of personality are absolutely needed for a teacher.

Nature of Mental Health

It has been said that mental hygiene is concerned with the maintenance of mental health and the prevention of mental disorder. What is mental health? Mental health is the full and harmonious functioning of the whole personality. By physical health we mean that all the organs of the body are functioning fully and completely, and in harmony with one another. Mental health concerns the personality as a whole. No doubt at birth we have certain innate potentialities and each of these has its functions to perform. In the course of time we acquire a large number of potentialities and dispositions for the performance of new functions of service to the personality. The full expression and co-ordination of all these functions are necessary to a healthy life. There are mainly three requirements of mental health: full expression, harmonization and the direction to a common end of our native and acquired potentialities.

Full expression is necessary, for these potentialities are the 'material' of our personality and necessary to our biological adaptation in life. If they are suppressed, the personality suffers and we become inefficient. We are good but sapless. If they are completely repressed they may later emerge in abnormal forms as psychoneuroses.

Harmonization: The potentialities often conflict with one another and so it is necessary that there is harmonization; otherwise, they may conflict with the aims and end of the personality as a whole. For the peace and health of mind the co-ordination and harmonization of all these tendencies are necessary.

In considering the analogy of physical health, a man is not healthy in whose body, all the organs are working completely and fully, but each on its own. The body is an organism, and should work as a functional unity; and if any organ of the body works out of harmony with the rest, the result is not health but physical disorder.

If those potentialities, whether rage, sex, or ambition function completely but independently of the rest of the personality and its ends, they would produce not mental health but mental chaos and unhappiness and ultimately the breakdown of the personality as in phychoneurosis.

It should be remembered that these potentialities should be directed towards a common end or aim. Ideals, aims and purposes in life are necessary to mental health.

Mental health is dynamic; it is the functioning of the whole organism towards an end; it is not stagnation but a harmony of movement, living and active.

The standard of mental health in principle applies to every one but it differs in practice for each individual. What is conducive to the health and happiness of a man of a placid temperament may be quite unsuited to the happiness of another. One woman finds her health and happiness in her domestic and family life, another in a career, whereas a third is more content with social service.

The purpose of vocational guidance is to discover for what work each individual is most fitted, not merely for efficiency, but for individual health and happiness. We do not deny that the principle of mental health is the same for all, but it works out differently for each person and gives scope for the play of individuality; it does not turn out everyone to a pattern, but allows of infinite variety in our personalities.

This standard of mental health is our aim in treatment. The treatment lies not merely in the abolition of a symptom, but the restoration of the whole personality to full functioning and happiness. In psychoneurosis, analytic treatment is the best, the purpose of which is to release the repressed emotions causing the neurosis and to redirect them to the service of the personality as a whole.

Biological efficiency cannot always be taken as a standard of mental health. There are thousands of men and women who are most efficient but who are most unhappy; they are very successful, but full of anxiety; indeed, it is often their very anxiety which drives them to success. But it is often found that these successful men break down in the end, which proves that they never were really mentally healthy.

Another popular standard of mental health is social adaptation. But it is true that social adaptation is not an adequate standard of mental health. A neurotic is often one who is too "social". An individual becomes neurotic because he has been led to conform too rigidly to social standards to the detriment of his mental health. He becomes so anxious to win the approval of others that he suppresses his own individuality and thereby does violence to his personality and ultimately develops neurosis which is a rebellion of his natural self against the rigid demands of society.

Mental health differs from ethical standards in so far as they are conceived as objective standards of right and wrong.

Goodness does not always protect against neurosis. A man may be very religious but suffer from phobia or sex perversions. It is seen that the efficient man is not necessarily mentally healthy, but the mentally healthy man will be efficient.

Types of mental diseases — Problem Behaviour and Delinquency — Clauses of mental diseases and difficulties — environmental and constitutional

It is arbitary to classify mental diseases in types. Symptoms of diseases are so overlapping that it is very difficult to label a pattern of neurotic adjustments with a specific term. The clinical pychologists should therefore guard against concentration on a disease entity. They should rather concentrate on the individual, on the behaviour manifestations of the frustraions and conflicts which is experienced by an individual personality. If the fact is constantly kept in mind that the individual takes precedence over the behaviour disorder — it is helpful to have a rough classification of neurotic reactions.

In "The Psychology of Behaviour Disorders", Cameron[1] defines such disorders as "relatively fixed, crystallized patterns of maladaptive attitudes and responses." He then classifies the serious disorders in the following eight groups: (1) hypochondriacal disorders; (2) fatigue syndromes; (3) anxiety disorders; (4) compulsive disorders; (5) hysterical disorders; (6) paranoid disorders; (7) schizophrenic disorders; (8) manic and depressive disorders. The last three of these represent psychotic adjustments and the first five neurotic adjustments.

In 1952, the American Psychiatric Association published a revised diagnostic and statistical manual of mental disorders. They are classified as follows: anxiety reaction; dissociative reaction; conversion reaction; phobic reaction; obsessive compulsive reaction; depressive reaction; psychoneurotic reaction.

Anxiety Reaction

In an anxiety reaction, which was formerly known as anxiety neurosis, the anxiety is diffused. The difference between phobias and anxiety reaction is that in the latter, it has not been channeled into relatively definite outlets as in the case with other neurotic reactions such as phobias. It is mainly characterised by generalised apprehension, by indecision and by a feeling of helplessness. The individual fears the future uncertainties and this dread of the future weighs heavily on his mind. An anxiety state has no reductive value at all, the emotional upset remaining undiminished. It is found that most persons who suffer from severe anxiety show the same sort of visual symptoms as do neurasthenics, with the more distinctly psychological reaction of intense fear super-imposed.

---

[1] Norman Cameron, The Psychology of Behaviour Disorders, p. 9.

The anxious individual is always uncertain. He is in difficulty of coming to a definite decision. He is very sensitive to failure, specially to moral failure.

He is anxious and is sure that anything he attempts will result in failure. He depends on others though he does not like to be dependent and so resentment grows up within him. This resentment leads to aggression toward others or toward the self. Thus the person suffering from anxiety neurosis is likely to strike out in anger against those upon whom he is dependent, but rarely has he the courage to carry through. There is quick reversal to aggression against the self — to marked self-condemnation. The individual begins to hate himself.

Anxiety Hysteria

It is characterized by morbid fear of harm to oneself, typical examples of which are agoraphobia, claustrophobia, fear of illness, of loneliness, of separation, which are the reproduction of repressed primal fears in infancy.

This is of two main types, hysterical and obsessional. Hysterical anxiety is the emergence of suppressed and repressed fears; obsessional anxiety is the fear of the consequences of forbidden impulses.

Both are characterized by fear of harm to oneself, both are derived from infantile objective fears.

Hysterical anxiety has been classified by Dr. Hadfield into three groups: (a) in the first type, morbid fear is used in precisely the same way and for the same purpose as a conversion hysteria, namely as a means of getting notice and attention; (b) secondly there is the type in which illness is unconsciously derived, as in conversion hysteria, but it is feared because of its dreaded consequences. So we develop a fear of the illness we desire, instead of developing the disability itself, (c) In the third type there is a primal fear in infancy which has been repressed by an attitude of independence and self-sufficiency, but which emerges in its original form as a fear of loneliness, separation or suffocation.

There happens a transition from conversion to anxiety hysteria.

The first form of chronic hysterical anxiety is that in which fear or anxiety is used exactly in the same way as a conversion hysteria, paralysis or blindness may be used. This is no doubt an unconscious means of getting attention and sympathy. One child gets attention by developing a pain in the back, another child by developing a fear. This child uses fear as a means of getting the attention he wanted. These are deliberate. But a time comes when the process becomes unconscious and automatic and the child becomes victim of its own fears. There are cases when children use fear as they may use conversion hysteria, as a means of getting the sensuous comfort and sexual gratification from being petted.

A case history is given here in which the anxiety hysteria represented a repressed wish of a girl of sixteen. This girl like her mother had a fear of illness. In infancy she felt neglected because she was healthy and her elder brother was invalid, who got all the attention of the parents. She pretended illness and got attention from her mother but her father seeing that she was putting it on insisted on taking her mother out. The girl felt that if she were really ill and needed her mother's help, her mother might refuse to stay and so she should no longer rely on her mother. She gave up the desire to be ill and assumed an attitude of independence and self sufficiency. But at puberty when there is a natural tendency in a girl to be dependent and to want to be loved, a conflict arose between the old independent self-sufficiency and this desire for love which re-awakened the original repressed desire for love in early childhood. The symptom which emerged was the fear of illness.

An illness is a disability, an incapacity, a threat to one's power. Therefore, while a *conversion hysteric* being a more dependent type develops an illness, the *anxiety hysteric* only fears it.

Dissociative Reaction

Though there is a wide-spread belief that this form of neurotic behaviour is very frequent, actually it is not so.

The three dissociative reactions of psychogenic origin are *amnesia, fugue* and *multiple personality*. The central feature of each of these disorders is a loss of personal identity.

It is amnesia when the individual forgets temporarily all the experiences which are associated with the kind of self which he wishes to forget. He may retain his learning. He still continues to speak the language which he knows. He may be in the state of amnesia for just a few minutes, for some hours or for days. But if this loss of identity continues for a long period of time, it is called a *fugue*. It is found that an individual may live in this state of fugue for several years.

Amnesia or fugue is explained as a neurotic escape from an intolerable situation. Though amnesia or fugue appears suddenly, there is nearly always in the background a history of neurotic anxiety growing out of severe conflicts. Neurotic anxiety becomes unberable and brings a crisis in the personal life of an individual and this loss of identity is then utilised as a solution. An individual in this state of neurotic anxiety experiences the desire to get away, to "take off", to forget the past and start all over again. It is always found that the neurotic person who resorts to amnesia experiences this desire as a compellling wish and if it is pushed further, he succumbs to it.

When dissociation appears in the very extreme and very rare form it is known as *multiple personality*. In this case, loss of the original personal identity is replaced by two or more new self systems which apparently function independently. There is no doubt that this multiple personality is developed basically in the same way that amnesias and fugues develop. The individual feels the need to escape from the conflicts of the past and from threat of the present. But it cannot be denied that in the development of multiple personalities, the emphasis may be given more to the *conflicts of the past*. A person who has developed a full-fledged multiple personality has made a complete escape from his real self and has developed the two or more parts which he once consciously played into actual separate self-concepts.

Conversion Reaction (Hysteria) and Psycho-physiologic Disorders

The disorders are classified as psychophysiologic, rather than as neurotic reactions due to difficulties in making an arbitrary division of conversion reaction and other physical manifestations of tension. The best way to decide whether or not a physical reaction is neurotic is to ask questions: Do the physical manifestations fulfil a neurotic purpose? Do they represent a conversion of conflict, this conversion bringing some relief from anxiety?

Hippocrates described hysteria in *De Virginibus*. He considered it to be a physical affliction limited to women and believed that it was caused by a wandering uterus. Although he did not speak specifically of sexual causation in hysteria, he did recommend marriage as treatment. Galen, however, did not accept the thesis that hysteria was caused by a wandering uterus, but he believed that it was associated with that organ. He recommended stimulation of the clitoris and the neck of the uterus as treatment. Both of them perhaps had the vague idea that sex and hysteria were somehow associated.

In the 19th century a new approach to hysteria was made by Charcot, by Janet and Freud. Charcot believed that hysteria was a disease entity. He maintained that one of the major characteristics was cutaneous anaesthesia. He recommended rest and isolation as the method of treatment.

Janet believed that hysteria began with exhaustion, which in turn brought on depression causing a retraction of the field of consciousness, which limited the patient's ability to carry on complex mental operations. This inability in doing complex tasks resulted in dissociation. In other words, he believed that hysteria was a failure to maintain integration of the personality. Janet believed that the physical manifestations of the disorder in hysteria were mental in origin.

Freud's approach was different. He maintained that the symptoms of hysteria had not only psychic cause but also that the origin of the symptoms was hidden from the patient, and that the reason for the patient's inability to recall the causes was that the memories were unpleasant and associated with guilt feelings. The patient could not forget but instead repressed these unpleasant memories into the unconscious. Some outlet being necessary, it was used in the form of bodily complaints. This is why Freud used the term "conversion hysteria". Early in his career Freud used *hypnosis* as a method of treatment, but later he turned to free association.

Horney however made a little progress in the matter. She emphasized the cultural factor in the development of hysteria and other neuroses. She did not hesitate to stress on anxiety and hostility such as grow out of cultural conflicts as important causes of neurotic behaviour. The anxiety is a feeling of helplessness experienced by the individual in the face of a hostile world.

It has already been pointed out that hysterical symptoms are often used aggressively against others as spite reactions. Symptoms are sometimes developed and used aggressively by a patient in relation to himself. It is used as a technique of withdrawal or escape.

Hysteria thus is a behaviour disorder in which psychological conflicts take shape as physical symptoms. It is a learned reaction to frustration. It is a fact that we react physically to psychological stimuli. Fear and anger, psychological in origin, carry in their wake a whole train of physiological effects resulting in stomach ulcers though they are directly caused by the presence of acid digestive juices acting upon a stomach whose muscles have been inactivated. A similar situation exists with respect to functional heart disorders. It is found that when an individual is emotionally calm his heart normally pumps three and one-half quarts of blood each minute through the arteries. Under emotional stress, such as fear or anger however, the heart responds to the emergency by pumping from five to six quarts per minute into the arteries.

Phobic Reaction

Fear responses in most cases are aroused in adults when an intense stimulation is presented very *suddenly,* under circumstances that permit the use of no habitual adjustments that would enable the individual to cope with the situation.

A phobia is nothing but an intense fear reaction to a specific situation or object. Even when a person understands that no actual danger exists, he is nevertheless afraid. Sometimes, however, a phobia is associated with an obsession. In such cases the person responds to the obsessive thoughts as he would to the actual situation.

There is no one who is wholly without fear and most people have specific fears. But these specific fears become a matter of concern when they become so intense as to interfere with the person's normal activities and affect his mental health.

As to the characteristics of phobias, Dr. Shaffer from an examination of a large number of cases of phobias discovered certain uniformities in them. (1) The phobias date from an intense fear-producing experience, usually occurring in childhood. (2) The sufferer is unable to recall this experience until assisted by the special techniques used by the psychologist. The remembering of the incident is said to be repressed. (3) The circumstances of the fear experience were such as to provoke a sense of shame or guilt, so that the subject does not tell of the incident. In most cases, the subject does not even think of it or tell it over to himself in inner speech, because of the unpleasantness involved. (4) Upon the recall of the fear-producing experience, the phobia is greatly lessened. On telling it over several times and assimilating it, the phobia disappears.

The most common types of phobias are the following:

Acrophobia, fear of high places;

Agrophobia, fear of open places;
Algophobia, fear of pain;
Claustrophobia, fear of closed places;
Hematophobia, fear of sight of blood,
Hydrophobia, fear of water;
Mysophobia, fear of contamination,
Nyctophobia, fear of darkness;
Photophobia, fear of strong light,
Toxophobia, fear of being poisoned;
Zoophobia, fear of animals.

There are mainly three causes of phobias as suggested by Carroll: (1) a traumatic fear experience which in most cases has been forgotten; (2) a conditional response in a fear-producing situation usually experienced during early childhood; (3) the projection or symbol of a general fear or of a conflict.

Almost in all cases the real cause of the phobia is either unknown to the sufferer or so repressed by him that he cannot recall it. Of course there are cases when we tend to inhibit recall of unpleasant experiences. Repression frequently results in distorted expression. It is perhaps true that many phobias are the distorted expression of thoughts or experiences associated with a feeling of guilt. Phobias are fear reactions made to a restricted class of stimuli and usually called forth only in the presence of the feared object. The stimuli for phobias often seem inexplicable and have little relationship to the major problems of the individual's life adjustment. Persons thus may be discovered who have phobias for high places, for small enclosed spaces or for certain animals.

The Freudian school believes in repressed memory. This repressed memory is supposed to remain active in the unconscious and seek to come out in disguise, thereby causing eccentricities of behaviour, including phobias. There is a failure to recall a repressed experience in its actual form. But this failure is not due to extinction but to the more positive process of inhibition. It is commonly found that most persons try to make an avoidant response to shameful or guilty feelings, which are a form of fear of social disapproval. This is performed by means of the inhibition of recall, by the avoidance of external stimuli that would arouse it and by making substitute responses that serve as distraction activities. The individual reinforces the process of repression by avoiding the stimuli that would elicit the response of remembering. This fact is very noticeable in phobias, in which the subject prevents the arousal of emotional tension by staying away from closed places, high places, running water, crowds etc. or whatever is the stimulus for fear. The sufferer from a phobia is not always cured because the repression of recall prevents the original episode from being remembered, repeated and rehearsed. But phobias are problems of adjustment, not basically different from other types of adjustive difficulties. To cure a phobia, not only the recall of the causal experience, but also the individual's readjustment to it, is necessary.

AGORAPHOBIA: This is said to be a fear of open space. But on closer investigation, it is found to be not so much a fear of open space as a *fear of isolation*, fear of loneliness, fear of separateness. In hysterical anxiety, the infantile fear is expressed but emerges when the barrier of self-sufficiency breaks down. In obsessional anxiety this fear assumes a moral nature, for by his anti-social aggressiveness the obsessional cuts himself off from his fellows.

CLAUSTROPHOBIA: The fear of close spaces. An instance of a patient who feeling stuffy in a small bed-room, got up in the night, broke the window and slept peacefully only to find in the morning that he had broken the glass of the book-case. It really represents a fear of suffocation. Hadfield however, points out that the fear of a closed space is symbolic of the frustration, suffocation of the personality.

FEAR OF FALLING: Watson would have us believe that fear of falling is innate. But it has some complexity. There is reason to think that astigmatism with the production of giddiness may be a factor; others think that it is due to lack of co-ordination, for whilst your eyes tell you that you are 100 feet from the ground, your feet tell you you are 5 feet from the ground. Psychologically, it may be an objectively conditioned symptom originating in a terrifying experience of an actual fall in infancy.

The fear of falling symbolically represents a fear of falling from our pedestral, whether of our ambitions, as in Adlerian psychopathology or of a moral lapse, a "fall" of a sexual nature. Even the fear of the impulse to throw ourselves in front of a train which is obviously not consciously wished but fills us with horror, is sometimes due to a subconscious wish to let everything go. It often occurs in people who are overstrained and have an unconscious urge to "put an end to it all". In others we have found it to be a masochistic sexual desire to be "less than the dust beneath thy chariot wheels."

Compulsions

Compulsive acts are forms of behaviour which the person feels impelled to carry out in spite of the fact that they are unreasonable.

Such compulsions take place because the individual cannot eliminate his doubts by one or two repetitions. The individual feels forced to return to his house again and again to be certain that his door is locked. Perhaps the most common of the compulsive acts is hand washing. This may be considered as a manifestation of a deep seated fear of disease or it may be a symbolic attempt to wash away the feeling of guilt. In Shakespeare's Macbeth, a fine example of this is seen when Lady Macbeth gives expression to her feeling of guilt by trying to cleanse her hands of imaginary blood spots in her sleep.

> LADY MACBETH : Out, damned spot! Out, I say! One; two; why, when 'its time to do it. — Hell is murky! Fie, my lord, fie! a soldier, and afeard? What need we fear who knows it, when none can call our power to account ? — Yet who would have thought the old man to have had so much blood in him?

There are compulsions which are disturbing to the individual unless carried out and they are called the manias. *Kleptomania,* a strong impulse to steal; *Pyromania,* an urge to set fires; and the most serious of all, *homicidal* mania, a compulsion to kill.

A person suffering from Kleptomania does not steal because he needs the articles which he takes but he does so, in part, in order to compensate for his feeling of helplessness. This theft provides him with a temporary sense of power.

As in all other behaviour disorders, in compulsive disorders, it will be of little or no help to treat the symptoms. It is necessary to discover the individual's basic frustrations and conflicts and to attempt to reduce them. It is found that a person who suffers from serious compulsions is usually a fearful, repressed individual who feels impelled at times to assert himself.

Depressive Reaction

A neurotic depressive reaction may be considered as being halfway between normal discouragement and grief and psychotic depression. In a normal person, the death of a loved one is usually responded by weeping, restlessness, sleeplessness and a feeling of hopelessness concerning the future. In the case of normal grief and depression, the passage of time with the new interests it brings lessens the despair. Life is worth living once more. The psychotic depression reaction on the other hand brings symptoms like delusions, hallucinations, extreme feelings of guilt, strong suicidal desires and marked retardation of the thought processes. Self-reproach adds greatly to his grief. This consciousness of guilt so intensifies his anxiety that he is forced to get relief through extreme self-criticism and relatively long-continued depression. In other words, the depression fulfils a neurotic purpose.

It may be concluded that neurotic reactions are ways of dealing with persistent anxiety. They are purposive and learned adjustments. They may not be classified as diseases but they are considered as salient behaviourial characteristics. Anxiety reaction is adjustment diffused. A dissociative action is a form of running away from one's self as in amnesia or in the development of a multiple personality. In a conversion reaction, the individual gets a partial escape from his anxiety developing functional physical symptoms. In a phobia reaction displacement of anxiety from the experience or experiences which caused it takes place in the form of a specific fear. Obsessions and compulsions are taken together under the heading obsessive compulsive reaction since an obsession is really a compulsive reaction because obsession is a compulsive return of disturbing thoughts. In compulsive behaviour the individual as if is compelled to carry through with certain acts even though he himself realises how unreasonable and even antisocial they are. A depressive reaction significantly involves a rather long period of depression which never escapes from self-criticism.

In this connection we may have some discussion in the light of Hadfield's view in the matter. Reaction traits of character as Hadfield believes are those conditions in which the undesirable qualities are so repressed that we are quite unaware of them and nevertheless assume an attitude against them. The conceited person whose conceit is a reaction character trait, may flatly deny that he has any inferiority complex.

The reason for such repression is the painfulness of the experience, such as the disappointment of unrequited love, the distress of humiliation, the threat of consequences; and the purpose of the reaction trait is an attempt to obliterate this painful experience, to dissociate ourselves from it, to forget about it, and so to avoid the distress associated with it.

The characteristics of reaction traits of character:

(a) They are reaction to an opposite tendency which is repressed.

(b) Owing to this repression, there is always a duality in the personality, which is divided against itself, since there are two opposing tendencies, one of which represses the other. There is a split in the personality, an endopsychic conflict, in which there is a reaction of the individual against himself. It is no longer a biological problem concerned with the relation of the individual to his environment as in simple character traits, but a psycho-pathological problem of a person's abnormal relation to himself.

(c) Reaction character traits are always abnormal.

(d) This duality in the personality accounts also for many inconsistencies of character. A man is rude to his wife to whom he is otherwise devoted, but charming to everyone else; it is because he has an inferiority complex and dislikes his wife for knowing it.

The reaction character is therefore the mask or "persona" we assume which may be quite different and even the opposite of our real self.

(e) Reaction character traits are alwaye exaggerated, they not only compensate but over-compensate.

(f) Reaction traits tend to be fixated and arrested in development.

(f) Reaction traits are persistent. Reaction character traits are chronic because they represent an unsolved problem since the repressed tendency is unconscious.

It is to be remembered that though we are inclined to condemn these reaction traits as abnormal and vicious, they may be considered as the attempt of the personality to maintain itself against unnatural circumstances, the only means of maintaining one's individuality.

Treatment

The *reaction traits* are very difficult to diagnose and to treat. Because of their restive nature rection character traits are sometimes difficult to diagnose from psychopathic personality, but its causes are *psychological* and not *constitutional*. It is not that he cannot be taught but won't be taught. The difficulty in treatment lies in getting the co-operation of the patient, since as a rule he refuses to admit that his attitude or acts are abnormal.

In order to deal with reaction traits and delinquency we should not pay regard to the surface behaviour, which is the reaction but to the *underlying* feelings and emotions. When a child's lying, truculence, stealing or grievance is reaction to frustrated need for affection, we do not punish the character trait but deal with the basic need for affection.

Environmental treatment may be permanently successful with small children where the personality is still in a fluid state and the complexes not fixed. But the complex may be too deep-rooted to be affected at all by such environmental treatment, and then *analysis* is the treatment. The purpose of the analysis is to discover and release the repressed emotions of which the character trait is the reaction. But this analytic treatment requires the co-operation of the patient.

Psychoneurotic character trait

Psychoneurotic character traits are the emergence into activity of repressed tendencies. The mechanism of both reaction and psychoneurotic character traits is the same, but in the former it is the repressing, in the latter it is the repressed tendency which provides the symptom.

Moreover, the reaction trait is usually complained of by others, the psychoneurotic trait by the patient himself. If fear, for example, is repressed in childhood and an attitude of *bravado* is assumed, the latter is an abnormal reaction trait, though not recognised as abnormal by the patient who adopts the attitude as a defence, but if the repressed fear emerges as *anxiety,* we have a phychoneurotic character trait of which he complains.

The characteristics of the psychoneurotic character traits by which they may be clinically distinguished are given below according to the views of Dr. Hadfield.

(a) They are the emergence into conscious activity of repressed tendencies.

(b) They are always abnormal being the results of repression. They are recognised by the patient as abnormal.

(c) They are exaggerated. They were originally exaggerated before repression and have become further exaggerated by frustration.

(d) They are crude and primitive because they have been *arrested in development* owing to being repressed.

(e) Because they are dissociated, psychoneurotic character traits are beyond the power of our will and tend to be compulsive. The woman who has outbursts of temper against her baby to whom she is devoted has a latent and repressed jealousy of the baby whom her husband loves, but she cannot help herself.

(f) They are the complete opposite of the ordinary character of the individual. It is the model boy at school who is found to be a thief, the quiet, homely girl who gets the illegitimate baby etc. The woman shoplifter is a respectable and well-to-do woman and has no need of things she takes.

It is indeed one of the tragedies of life that so many people find themselves victims of impulses and passions, morbid desires and repugnant thoughts, which are completely alien to their ideals and principles but which they are quite unable to account for or control. "It is no longer I but sin that dwelleth in me", they cry.

The distinction between the psychoneurotic character traits and the psychoneurosis proper (like hysterical paralysis) simply lies in this complexity. Both of them are the outcome of repression. But we use the term psychoneurotic character trait when the repressed tendency comes out in a comparatively simple form, as timidity, tempers, self-pity or autoeroticism, the psychoneurotic counterparts of which are hysteria, obsessions and sex perversions.

Delinquency

Delinquency may be defined as anti-social behaviour. An individual enjoys social privileges and so he must conform to the demands made upon him by society to modify and change his conduct in response to its demands. But in spite of his acceptance of the social privileges, he refuses to conform, then his conduct is regarded as a delinquency, a vice, a crime. Delinquency is thus a failure in social adaptation.

Delinquency may be the manifestation of neurotic complexes and should be treated by psychoanalysis. Some believe in treating the delinquent humanly in the hope of appealing to his better feelings, so that he may be wooed from his antisocial tendencies, back to a more social life. It is caused by pathological disorders and so it should be studied also as a problem in mental health.

It is found that in many cases the delinquent or criminal knows perfectly well what he is doing and that he is also disapproved by society and has the power to desist if he wants but he does not. But there are cases where the delinquent fails to distinguish between right or wrong owing to mental deficiency or insanity. Different types of delinquencies are classified by Hadfield:

a) BENIGN DELINQUENCIES — they are abnormal from a social or legal point of view, but not abnormal from the point of view of mental health. Playing truant on a bright spring day, to go hiking in the woods is delinquency — these are against school rules and therefore punishable.

Stealing is practically normal for the child of eight or nine who is in the 'primitive man' stage of development. It is a benign delinquency, but mother and teachers should not take too serious a view of it or regard it as moral turpitude. To call such a child "a young thief" may lead him to become one.

From the point of view of the psychology of the adjustment, Sherman (1934) has distinguished three principal types of motivation basic to lying and stealing. These are (1) Lying and stealing to be on a par with playmates and to have what they have; (2) Lying and stealing to gain attention and (3) Lying and stealing as emotional outlets for conflicts, often sexual, and for other adjustment difficulties.

Delinquencies as Defences

Compensation often takes the form of over-assertion of a false or anti-social form of superiority and it may not be strange that many so called delinquencies come from this mechanism.

Prof. Carroll considers delinquency as aggressive forms of behaviour towards society in response to lacks within the individual or within his immediate environment. Every delinquent and criminal should be considered as a psychological case. Punishment though necessary at times is not the most desirable form of treatment. Attention should be given not to the crime but to the individual who commits it and the conditions which have led the individual to commit the anti-social behaviour.

(b) TEMPERAMENTAL DELINQUENCIES — This form of behaviour is based on disordered physiological functioning. Menstrual changes in girls and women are so commonly a prelude to delinquency that Havelock Ellis has said that if a woman is a shoplifter the chances are that she is at the time of her menstrual cycle. It is not universally true. But "there were also marked psychoneurotic factors present relating to the repressed rebellion against her father" — Hadfield.

(c) SIMPLE DELINQUENCIES — These are the products of ordinary environmental influences. They are the effect of the conflict between the claims of the individual and the demands of society. They are caused by bad circumstances such as poverty, overcrowding, drunkenness and prostitution in the home. But Cyril Burt does not fully agree with this. (Burt's *Young Delinquent*).

(d) SIMPLE DELINQUENCIES — These are due also to bad upbringing, such as spoiling, lack of discipline, too much discipline, frustration and identification with bad parents.

The treatment of these simple delinquencies is sociological. New environment, new purposes in life should be presented. Punishment may be required but all punishment should be in the form of "cure" which means "restoration to normality". Punishment, therefore, should be remedial.

Capital punishment is obviously not remedial, though it effectively prevents the criminal from committing further crimes and so protects society. Whether this capital punishment deters others from murder is a question upon which experts differ and is not easy to determine.

(e) REACTION DELINQUENCIES — These have been produced by environmental conditions usually in childhood. These conditions have been repressed and developed definite complexes in the mind which thereafter determine the individual's behaviour whatever be the environment. But this is all due to the feeling of deprivation of love at childhood.

A CASE HISTORY: A girl at school was very troublesome. She was born during the war in the absence of her father and was naturally spoilt and allowed her own way by her mother. When she was three years of age her father returned for good. She resented his intrusion. Sometime after another baby arrived which she regarded as "another bid of dirty work on father's part." She reacted to this situation by tossing her head and saying, "be damned, the lot of you", tore up her parents' photographs. She was a rebel, not merely against society, but a rebel against herself, against her craving for love and affection.

To treat such a child by punishment is precisely the way to perpetuate her resentment and make her more defiant. She was willing to co-operate, being unhappy at school, and was treated by analysis. She came to realise the cause of her defiance, readjusted her attitude towards her teachers who were in fact kind and was cured of her resentful attitude towards life.

Sexual reaction delinquencies are very commonly due to the feeling of deprivation of affection. Protective love and sensuous pleasure are so intimately associated in infancy that it is not surprising that one is easily substituted for the other; so there are those who are deprived of affection who turn to find in sexuality a solace. Many of those who take to prostitution are of this type; deprived of affection they become disillusioned and cynical about love, and find a temporary satisfaction in sex, (though not permanent).

Treatment of Reaction Delinquencies

It is commonly found that ordinary naughty children are made worse by punishment. A boy of fourteen, a bespectacled youth, for example, constantly stole, and being constantly beaten by his father, stole more. It transpired that his spirit which made him steal was a compensation for his feeling of physical inferiority.

The case of simple delinquency is different. Here the act is deliberate and due to bad training and low standard of social conduct. Punishment is sometimes useful in simple delinquency.

Analytic treatment which discovers the latent cause of the reaction and releases the depressed feelings is the most adequate form of cure.

Psychoneurotic delinquencies are the emergence of repressed impulses in the form of anti-social behaviour. They are mostly due to latent resentment.

"Adolescent instability" may be constitutional for endocrine disorders of development and under-development and are common causes of delinquency. But 'adolescent instability' may be due to complexes already present. Stealing in adolescence is often due to the need for love and security, specially in girls at puberty, which is different from sex craving.

We are not concerned with the problem of Psychotic Adjustments in this chapter as mental hygiene is not justified in studying psychoses — strong mental diseases.

FOR FURTHER READING

1. L. F. Shaffer — The Psychology of Adjustment.
2. J. A. Hadfield — Psychology and Mental Health.
3. P. A. Witty — The Mental Health of the Teachers.
4. R. Printer, L. D. Crow and others — Educational Psychology.
5. Norman Cameron — The Psychology of Behaviour Disorders.
6. Herbert A. Carroll — The Dynamics of Adjustment.

Questions

1. When would psycho-physiological disorders be classified as conversion reactions ?
2. How is it possible for a person to develop amnesia?
3. What is meant by conversion reaction?
4. What are the characteristics of a phobia?
5. What are the characteristics of the hysteric personality?

CHAPTER XII.

Graphic Representation of Data

Statistics are very helpful in the field of Educational Psychology in order to fulfil the necessity of measuring intelligence and achievement of a large number of pupils. Various methods through which the scores of a large number of pupils can be measured have been evolved.

It is essential therefore to work out a way through which all the scores can be arranged in a systematic manner. Whenever height, intelligence, emotional ability, or any such trait or ability is objectively measured, we take the help of statistics in measuring them scientifically.

Some terms used in Statistcs

RANKING : The pupils make scores when they are subjected to any test and the scores are made according to their acievements. It becomes difficult to compare the pupil's achievements with any particular score of any test (say, test of intelligence) when there is a lack of arrangement of the scores. The data of the scores which are not scientifically arranged are known as 'raw data'. Ranking of the scores is very important in order to know the exact position of an individual in relation to the other testees. If a student, for example, in a test scores 80 out of 100, undoubtedly his score is good, but unless all the other scores are known and arranged in order, it cannot be said whether his score is good or bad.

His position in the group may be highest or the lowest or somewhere in between when the scores of the other pupils are arranged. This arrangement of scores in order from the lowest to the highest is called *ranking*. The student can know his position when his score is ranked, When a large number of pupils go for a test, there is every likelihood that more than one pupil may obtain the same score. In ranking they will get the same rank.

TABLE 1

Scores of a mental test are arranged in rank order

Score	Rank	Score	Rank	Score	Rank
110	1	94	7	80	13
108	2	92	8	70	14
104	3	90	9	64	15
99	4	89	10	62	16
95	5.5	87	11	60	17
95	5.5	85	12	58	18

The scores of 18 pupils have been ranked. The first place has been given to one who has obtained 110 scores and 18th rank has been assigned to one who has obtained only 58 scores. The 5th and 6th pupils having scored 95, both of them have been given the same rank of 5.5.

Sometimes scores are arranged according to percentile ranks. It is based upon a group of 100. If a student of a class obtains a percentile score of 65, it means there are 35 above him and 64 below him.

Frequency distribution

In grouping the scores, for instance, the scores of pupils ranging from minimum 75 to the maximum 112, it will be convenient to put them within the boundary lines on numbers, 79, 84, 89, 95, 99, 104, 109 and 114 scores. The boundary lines are class limits and the numbers grouped between two limits are called class intervals, and the number of observations within a class interval is known as its frequency.

The arrangements is shown in Table 2[1].

Any unit may be chosen for the class intervals. The scores of Table 1 can be grouped by selecting a class interval of 5. One tally put against a class interval represents one score; two tallies two scores; and so on. The frequency of a particular class interval can be found by making the final total of all the tallies in table 3.

---

[1] Clark Trow William, Introduction to Educational Psychology, p. 102.

TABLE 2

Score	Score	Score	Score
85	95	78	81
101	95	95	87
102	94	86	83
96	96	75	105
102	77	91	—
85	84	84	83
101	96	81	88
88	112	85	101

TABLE 3

TABULATION SHEET

Scores	Tabulation	Frequency (F)
110-114	|	1
105-109	|	1
100-104	~~||||~~	5
95- 99	~~||||~~ |	6
90- 94	||	2
85- 89	~~||||~~ ||	7
80- 84	~~||||~~ |	6
75- 79	|||	3
		N = 31

The frequencies of scores are shown in the third column of Table 3. The letter (F) represents the frequencies. The method of presenting the score in Table 3 is called frequency distribution. The number of class intervals is determined according to the nature of enquiry. It is found that the large number of frequencies concentrate toward the centre, while fewer number towards the end.

Graphical representation

The tests having been administered, scored and the results collated, the next step would be to portray the frequency distributions in graphical form, in order that their characteristics might be determined more easily.

The most simple form of graph for this purpose is the histogram. In constructing the histogram, one has to draw two straight lines cutting each other at right angles and thereby getting one horizontal straight line known as X axis and one vertical straight line known as Y axis. In the histogram given on p. 312, the scores of 27 pupils in Test 'A have been graphically represented. Adjacent to the histogram is a statement of the mean 'M': the standard deviation σ the standard error of the Mean $(\sigma\sqrt{N-1})$ The standard error of a Mean become larger as the standard deviation of the distribution becomes larger. A more precise statement is that the standard error of a Mean is directly proportional to the square root of the number of cases. Adjacent to histogram not only is the standard deviation given but the standard error of the standard deviation is also stated. A true σ is the standard deviation of the population from which the sample was drawn. The formula for obtaining standard error of standard deviation is $\sigma\sigma=\sigma\sqrt{2N}$ But when 'N' is less than about 50, the formula to be used is $\sigma\sigma=\sigma\sqrt{N-1}$.[2] It must be remembered that the actual form of distribution is determined not only by the nature of the test itself, but also by the population tested and by the conditions under which the test is administered.[3]

A histogram positively skewed to the upper end and showing an accumulation of scores towards the lower end might result from testing an unrepresentative sample of a parent population, say, one from which all the brighter boys had previously been 'creamed'[4], or the test itself might have proved too difficult for a normal test group as a whole.

---

[2] Garrett, H. T., Statistics in Psychology and Education. Longmans, Green & Co., Third Edition. 1947, p. 194.

[3] Bingham, W. V., Apitudes and Aptitude Testing. 1937.

[4] Vernon, P. E., The Measurement of Abilities, 1940, Chap. I. p. 20.

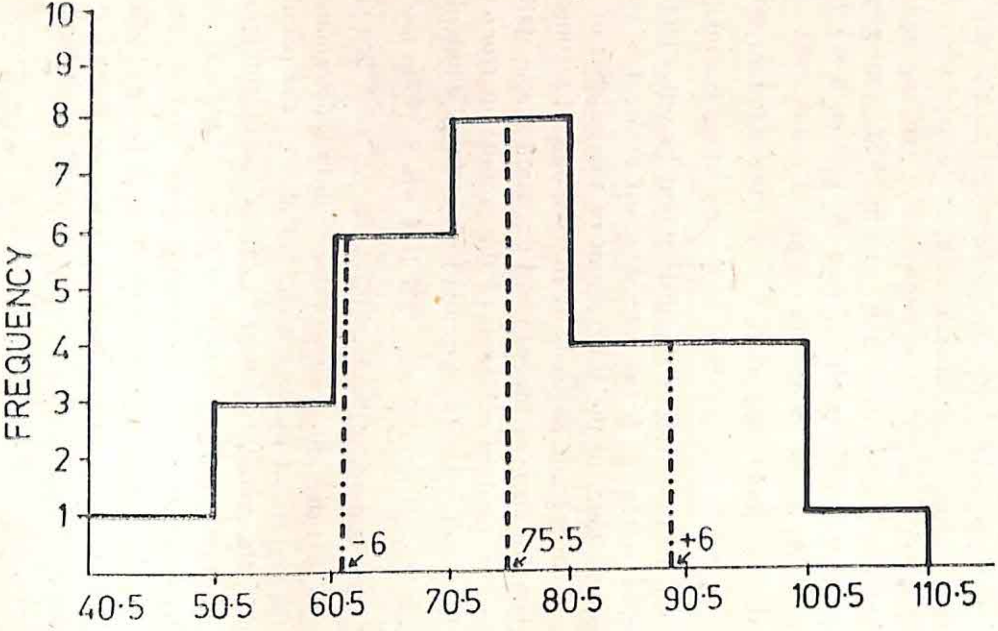


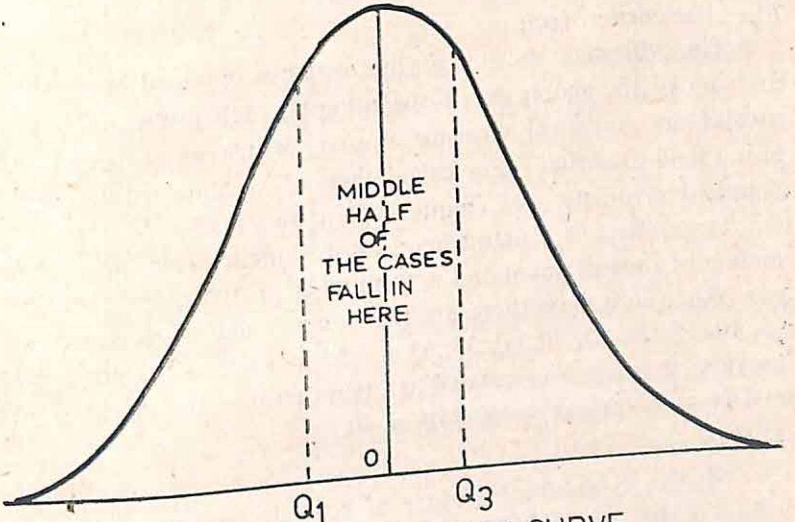
Fig. 19

POPUATION 27. HISTOGRAM OF VS 18, 1952
MSAN : 75.5 ± 2.80. S. D. : 14.4 ± 1.99

The Normal Probability Curve

From the study of histograms and the frequency charts, we have seen that in most of the cases, the scores of pupils tend to cluster at the centre of the scale. It seems therefore very clear that in any group there are a few whom we can call 'very bad' or 'very good', according to their scores on a test, and most of them are of average type. But there are instances when the curve is bell shaped which depends upon the distribution of scores.

The distribution of scores of any homogeneous group will take the shape of the curve given below: If the distribution of scores of pupils of similar age are represented, it may take the shape of normal probability curve. This bell-shaped curve is known as normal probability curve (Figure 20). This type of curve eliminates the effects of accidental variations and emphasises normal tendencies. But it is a fact that a distribution of scores rarely follows the normal probability curve exactly, but if the



NORMAL PROBABILITY CURVE

Fig. 20

number of cases is large (when the homogeneous group is not available), it will closely approximate it.

Central Tendency

The calculation of averages gives simple expression to a complex group. It is helpful in representing the group by a measure of central tendency in which all scores tend to cluster around it. If you know, for example, that the average intelligence quotient of the students of your college campus was 120, and you are asked to guess the intellectual level of a student whom you had never met and knew nothing about, your best guess would be 120. The chances are more favourable that he would be at or near that point than that he would fall at, for example, 105 or 160.

The two measures of central tendency which are most frequently used are the 'mean' and the 'median.

The Arithmetic Mean

The arithmetic mean is a score which is obtained by dividing the sum of the scores in a distribution by their number. It is a satisfactory statistical measure around which all scores of the group tend to cluster. For calculations of M. Standard deviation, Standard error etc., see chapter VII of this book.

Generally $a = Em/n$ when a = arithmetic mean, m = summation of measurement and n = number of items.

When in a class there are ten students and whose scores are 75, 10, 15, 20, 25, 40, 60, 35, 65 and 55 in a test — the arithmetic average or mean is calculated as : (sum total of the marks is 400 and $N = 10$) Mean $= 400/10 = 40$.

Median

Median is another measure of central tendency. It is the value of that item which is in the middle of the series and thus divides it in two equel parts. When in a class of 51 students, the students are asked to stand in order of height, the height of the 26th student shall be called the median height of the class.

The median is equivalent to the mid-score of an uneven number of scores, or the mid-point of an even number of scores.

The method is symbolically expressed as if M = size of (n + 1)/2 the item. The medium is represented by M and the total number of items is expressed by n.

∴ M = size of (51 + 1)/2 the item. M = size of 26th item.

In the next table, the computation of Median of a Frequency Distributon is given :—

TABLE 4*

Class interval	Frequency	Cumulative Frequency
70-74	4	18
65-69	1	14
60-64	2	13
55-59	2	11
50-54	2	9
45-49	1	7
40-44	6	6
	N = 18	

In this frequency distribution, the calculation of median is as follows : N = 18, N/2 = 9, F = 7, 1 = 49.5, FM = 2, i = 5.

The formula used is :

$M = 1 + (n - F)^2 fm/2$

Median = 49.5 + (9 − 7) 5/2

∴ = 49.5 + (2 × 5) /2

= 49.5 + 5 = 54.5

Mode

It is another measure of central tendency. In a distribution the measure which occurs most frequently is called mode. When in a class, most of the students secure 50 marks in a test it can be said that the model marks obtained by that class of students is 50.

Variability

A measure of variability reveals the degree to which the scores in a distribution tend to cluster around the point of central tendency. The mean score for the group of children, of course, gives us a line of reference with which to compare individual children but it hardly throws any light how the different scores are close to or scattered from it. The mean score is not the only quality we require to know about the marks of groups of children. We can say how far a child's score departs from the mean (negative if less, positive if more). We could call this score his deviation from the mean.

---

* Adapted from S. R. Jayaswal's Foundation of Education Psychology, p. 343

Mean Deviation

It is the mean of the deviation of scores from some measures of central tendency such as mean or median. For example, seven students have scored 2, 5, 5, 6, 8, 10 and 11 marks in a test. The median of the score is 6. No doubt there is sufficient difference between median score and other scores. Therefore the deviation of all the scores can be shown from the median.

TABLE 5
MEAN DEVIATION

Scores	Deviations
11	5
10	4
8	2
6	0
5	—1
5	—1
2	—4
	17

The deviations from the median should be added without taking into consideration the positive or negative signs. The sum of deviationss should be divided by the number of scores to give the mean deviation.

Symbolically Ed/N = 17/7 = 2.43.

It is however an unscientific measure as it does not take into consideration algebraic properties.

Standard deviation

The algebraic signs of the deviations can be eliminated (which was not so done in mean deviation) by squaring them before they are added. The standard deviation can be found by squaring the deviations from the average and then getting the square root of the sum.

The dotted line in Figure 15 (Chapter VII) represents the score of the same children on a second test. It may be supposed that the mean score of this second test is the same as the previous one. It will also be seen that the two distributions of marks clearly differ in another respect. The marks in the second test are much more dispersed i.e., the highest marks are higher than those in the first and the lowest marks are lower than any in this first. We measure this dispersion by standard deviation. Symbolically:

$$\sigma = \sqrt{Ed^2/n}$$

Ed^2 represents the sum of the squared deviations and N represents the number of items. Standard deviation is represented by σ It has been significantly used in computation of coefficient correlation.

Suppose a boy scores the same mark 'A' in both the tests. But are these marks equivalent? Superfically they are the same (i.e. 60 is 60) but if we compare the shaded areas APQ and ABQ, we see that more people in the second test (area APQ) score marks which exceed 'A' than do so in the first test (ABQ). A mark then of 'A' in each test does not mean the same thing. 'A' mark in the first test indicates better performance.

Different tests are standardised when their marks are referred to the same mean and the same standard deviation.

If a large representative sampling of children is examined with the Termann-Merrill revision of the Stanford-Binet test, the mean intelligence quotient will be 100 and the standard deviation of the distribution of intelligence quotients will be 16. This means that 68.26 per cent of the group falls between intelligence quotients 84 and 116, while there is practical certainty that no one will fall below an intelligence quotient of 52 or above an intelligence quotient of 148.

Quartile Deviation

Quartile deviation instead of considering each particular item, takes into consideration the groups. Thus it is based upon Quartiles.

Median in a distribution divides it in two halves and then it is divided into quarters. There we get three dividing points. The lowest point is called first Quartile i.e. Q1, the second point is the median and the third point is the third Quartile i.e. Q3. The distance between Q3 and Q1 is known as interquartile range.

$$Q = (Q3\text{-}Q1)/2$$

Quartile deviation points out that the position of a person in a group. When a particular pupil gets a score of 60 in a test it may not give any clear idea of his position in the group. When it is said, however, that he is somewhere above the third quartile, it gives the idea that at least seventy-five per cent pupils are below him.

Standard Score

The position of any score in relation to the total distribution may be conveniently described by saying that its deviation from the mean is so many times the standard deviation of the distribution. If, for example, a pupil scored 120 on an occasion in which the mean score for his group was 90 and the standard deviation of the distribution was 15, his relative position could be given unambiguously by saying that he scored at the level of two standard deviations or sigmas above the mean or, in other words, that his 'standard score' was +2. A standard score of —2 would be made by a pupil in the same group on the same occasion whose mark was 60 (two standard deviations below the mean), while a standard score of +1.5 would describe the relative position of a pupil scoring 112.5 (one and a half standard deviations above the mean).

Standardised Scores

When attempts are made to evaluate results, it is to be realised that the distribution of scores depends not only upon the ability of the individuals forming the experimental population, but also upon the intrinsic difficulty of the test and the marking scheme used to evaluate results. When two sets of scores are to be compared or combined, it is desirable to standardise them. This may be done by expressing them both as standard scores. When the distribution of scores is normal and two-thirds of the standard scores fall between —1 and +1 it is often found more convenient to re-scale two such sets of scores so that they have the same mean and the same standard deviation.

From a consideration of the subjectivity of raw marks (School or College marks awarded by teachers), it is better to standardise these marks. This can be done by reducing all the marks to 'T' scores[5] marking use of the formula:

$$T = \left[10 (X - M)/SD \right] + 50$$

Where X = the raw score

M = Mean Score

S. D. = Standard Deviation

We have discussed the ways of finding out Mean, Median and Standard deviations in the processes of computing test scores. But when the scores are large in number, to calculate mean by short method, the following methods may be used.

TABLE 6

Class interval	Mid point	f	x^1	fx^1
40-44	42	3	4	12
35-39	37	4	3	12
30-34	32	5	2	10
25-29	27	6	1	6
20-24	22	8	0	0
15-19	17	3	—1	—3
10-14	12	4	—2	—8
5-9	7	7	—3	—21
		N = 40		8

$M = AM + Ci$ AM means Assumed Mean

$C = EFX^1/N = 8/40 = 0.2$

$i = 5 \therefore M = AM + Ci = 22 + (0.2 \times 5) = 22 + 1 = 23$

To calculate standard deviation of grouped scores

---

[5] Freeman, F.N., 'Mental tests, Their History, Principle and Application', 1939, Chapter XI, pp. 263-303. 'T' scores are 'Z' scores adapted so as to avoid the occurrence of negative and fractional quantities.

TABLE 7

Class interval	x	f	d	fd^1	fd^2
20-29	24.5	4	—2	—8	16
30-39	34.5	20	—1	—20	20
40-49	44.5	43	—0	—0	0
50-59	54.5	70	1	70	70
60-69	64.5	50	2	100	200
70-79	74.5	11	3	33	99
80-89	84.5	2	4	8	32
		200		183	437

C = Correction = $Efd^1 = 183/200 = 0.91$

$i = 10$

$\therefore$ S.D. or $\sigma = i\sqrt{Efd2/N - C^2}$.

$= 10 \times 437/200 - (.91)^2$

$= 10\sqrt{1.3519} = 11.6$ (approximately)

Correlations

On many occasions it is desirable to assess the degree of correspondence between two sets of measures. This relationship is conveniently expressed by a correlation co-efficient. It has been tried by the Educational Psychologists to find out mental and educational abilities of pupils by tests. The relationship between two different performances of the same pupils in two tests of mental abilities is shown by correlation.

Correlation is the relationship of interdependence, between two quantities and the statisticians state in mathematical terms the degree to which the relationship between two measured variables exist.

A co-efficient of correlation provides no information concerning the individual case unless it represents a perfect negative or positive relationship. It must always be interpreted in terms of probability. Co-efficients of correlation range in size from —1.00 to + 1.00: —1.00 representing perfect negative relationship and + 1.00 perfect positive relationship.

The majority of correlation co-efficients appearing in psychological studies are positive; an individual who is superior in one trait is more likely than not to be superior in all others.

It should be remembered however that a co-efficient of correlation does not of itself prove causation. It may suggest that one variable may exercise considerable influence upon the others.

For example, there is a correlation of 0.50 between sibilings with respect to intelligence. It does not follow from this that a low level of intelligence in an older brother has caused the younger brother also to be low in intelligence.

The empirical study of the structure of mind was first made by Galton who introduced the idea of correlating two sets of test/ results. Correlation is the very kernel of the method of analysing mental ability into its factors. The measure of correlation between two sets is called the *correlation co-efficient.*

TABLE 8*

	English	Arithmetic	Moments above the average		Product Moments	Square Moments	
			Eng.	Arith.		Eng.	Arith.
A	5	7	0	1	0	0	1
B	9	10	4	4	16	16	16
C	2	5	— 3	— 1	3	9	1
D	6	6	1	0	0	1	0
E	3	2	— 2	— 4	8	4	16
Total	25	30	0	0	27	30	34
Average	5	6					

From the Table above it is found that there is some correspondence or correlation between achievements in English and Arithmetic. The average English mark is 5 and that of Arithmetic is 6.

To bring out the correlation more clearly, the deviation from the corresponding average mark (the moments) is shown in columns (3) and (4). We see that on the whole high marks in English are associated with high marks in Arithmetic and the low marks also occur together. There is some correlation between English and Arithmetic marks.

---

* Adapted from E. A. Peel's "Psychological Basis of Education", p. 108.

If low English marks were paired with high Arithmetic marks and vice versa, then, we have inverse association.

The correlation co-efficient, we use now was developed by Pearson. It is symbolised by 'r' and is called the *product moment correlation co-efficient.*

The first step in calculating 'r' is to form the products 0×1, 4×4, —3×—1, 1×0, and —2×—4 from columns 3 and 4 and to put them in column 5. We need also the squares of the moments for each subject and these are given in columns 6 and 7. Their totals are 30 and 34. The product moment correlation co-efficient is given by

$$r = \frac{\text{sum of products}}{\sqrt{\text{squares of the arithmetic moments} \times \text{squares of the English moments}}}$$

$$= +\frac{27}{\sqrt{30 \times 34}} = \frac{27}{31.94}$$

$$= +\ 0.85 \text{ approximately.}$$

Thus we may hold that performances in English and Arithmetic by the five children have much in common. In terms of mental capacity, there must be something common to the capacities to do English and Arithmetic.

Karl Pearson has devised the following formula in order to find out co-efficient of correlation. Calculation is made by dividing the sum of all deviations from their respective means by the number of items and the product of standard deviations of the two variables.

Symbolically the formula is,

$$r = \frac{\Sigma xy}{N\ \sigma_1\ \sigma_2}$$

'r' represents co-efficient of correlation, Σxy represents the summation of the product of all the deviations of each pair of observation from their respective means, σ_1 represents the standard deviation of subject, σ_2 represents the standard deviation of relative, N * represents first variable (subject) and y represents second variable (relative).

* represents the number of items or observations

TABLE 9

CALCULATION OF KARL PEARSON'S CO-EFFICIENT OF CORRELATION BETWEEN AGES OF HUSBANDS M^1 AND WIVES M^2

Subject x			Relative y			
Age of husband years m^1	Deviation from Average (25 years) x	Square of Deviation x^2	Age of wife (years) m^2	Deviation from average 20 years) y	Square of Deviation y^2	Product of deviation of husband's age & wife's age xy
31	+ 6	36	24	+ 4	16	24
31	+ 6	36	23	+ 3	9	18
30	+ 5	25	23	+ 3	9	15
28	+ 3	9	22	+ 2	4	6
27	+ 2	4	22	+ 2	4	4
26	+ 1	1	21	+ 1	1	1
25	0	0	21	+ 1	1	0
24	— 1	1	20	0	0	0
24	— 1	1	19	— 1	1	1
23	— 2	4	19	— 1	1	2
23	— 2	4	18	— 2	4	4
21	— 4	16	18	— 2	4	8
21	— 4	16	17	— 3	9	12
21	— 4	16	17	— 3	9	12
20	— 5	25	16	— 4	16	20
375			300			

$\Sigma x^2 = 194$ $\Sigma y^2 = 88$ $\Sigma xy = 127$ $a_1 = 25$ $a_2 = 20$

Therefore N = 15

$$\sigma 1 = \sqrt{\frac{\Sigma x^2}{N}} = \sqrt{\frac{194}{15}} = 3.59$$

$$\sigma 2 = \sqrt{\frac{\Sigma y^2}{N}} = \sqrt{\frac{88}{15}} = 2.42$$

$$r = \frac{\Sigma xv}{N\ \sigma_1\ \sigma_2} = \frac{+127}{15 \times 3.59 \times 2.42} = \frac{+127}{130.3170} = +0.97$$

The co-efficient correlation + 0.97 shows a very good positive correlation between the ages of husband and the ages of wife.

In this method the average is assumed and all the deviations are found out and are also squared and the standard deviation has been calculated.

Scatter Diagram

The use of scatter diagram is also in vogue to give the general idea of the nature of relationship between two variables. When a large number of pupils is tested, their scores are arranged in a digramatical way, the scores being divided in certain class intervals. They are represented on vertical and horizontal lines.

Questions:

1. What is the meaning of frequency distribution and how is it arranged from raw data? Explain and give examples.
2. Write notes on: (a) Mean (b) Median (c) Mode (d) Mean deviation (e) Standard deviation.
3. Find the standard deviation from the following distribution:- Class interval (=X) Frequency (=f)

25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-74
1	1	0	2	2	9	2	7	1	2

4. Define correlation, co-efficient correlation, and positive and negative correlation and indicate their uses in educational measurement.
5. Find the correlation by using product moment method scores of 10 individuals ranging from 40 to 60 in one set and from 70 to 100 in the other set with a class interval of 5.
6. Distinguish between 'raw' score and 'standard' score. How do you find out the 'T' score?

Bibliography

Adkins, D.C., "The Effects of Practice on Intelligence Test Scores" *Journal of Educational Psychology,* 1937, 28, pp 222-231.

Alexander, W.P., "Intelligence, Concrete and Abstract" *British Journal of Psychology* (Monograph Supplement) VI, No. 19, 1955

Allport, G., Personality, A Psychological Interpretation

Anastasi, A. and Foley, J.P., Differential Psychology.

Asch, S., "A Study of Change in Mental Organisation with Age" *Arch Psychology*

Barker, R. G., Adjustment to Physical Handicap and Illness; A Survey of the Social Psychology of Physique and Disability", Social Science Research Council, New York, 1953, pp 233-34

Bartlett, F. C., Remembering, 1932

Beard, R. M., "An Investigation of Concept Formation among Infant School Children" Unpublished Thesis, 1927. University of London.

Berneuter, R. G. (1953), "Implication of Research Studies on Intelligence", *Trans, New York Acad, Sci.,* XV. pp 301-34

Bloom, B.S., "Test Reliability for What ?", *Journal of Psychology,* Vol. 33, 1942, p 517

Boring and others, Foundations of Psychology

Brooks, F.D., "Mental Development in Adolescency", *Review of Educational Research,* VI, February 1936, pp 85-101

Brown, W. and Gilhouson, M.C., College Psychology, 1949.

Brownwell, W.A., "Problem Solving" in National Society for the Study of Education, 41st Year Book, pp 440

Burt, C., "The Development of Reasoning in School Children", *Journal of Experimental Pedagogy,* 1919, pp 68-77

Burt, C., Memorandum on the Distribution and Relations of Educational Abilities, 1917

Burt, C., Mental and Scholastic Tests, pp 138-139

Burt, C., "The Reliability of Teachers' Assessments of their Pupils", *British Journal of Educational Psychology,* Vol. XV, 1945, p 81 and Part II pp 80-90.

Burt, C., "The Differentiation of Intellectual Ability", *British Journal of Educational Psychology*, XXIV, p 85, 1954.

Burt, C., The Backward Child

Burt, C., Symposium... "Is the Doctrine of Instincts Dead ?", *British Journal of Educational Psychology,* p 201, *ibid* XI Part III p 144, and XIII, Part II 1943 and XII, Part I, 1942

Burt, C., The Assessment of Personality", *British Journal of Educational Psychology,* Vol. XV, 1945.

Burt, C., "The Incidence of Neurotic Symptoms among Educated School Children", *British Journal of Educational Psychology,* X 1940, pp 10-15

Burt C., *Journal of Educational Psychology*, Vol. XVII, Part II

Burt, Peel and Graham, "The Differentiation of Ability in Primary School Children", *Research Review,* pp 40-48 III, pp 31-39 (1951-52)

Bowlby, J., Maternal Care and Mental Health (W.H.O.) Geneva, Mon. 2, 1951

Cameron, E., Educational Psychology, 1927

Carmichael, L., Manual of Child Psychology, Chap. 1.

Child, L.L., "The Relation of Somata Type to Self-ratings on Sheldon's Temperamental Traits", *J. Person,* 1950 pp 440-453

Clark, Value of Student Interviews, *Journal of Personal Research,* 1926

Cox, J.W., Mechanical Aptitude (Methuen, 1928)

Cruickshank, W. M., The Exceptional Child in Contemporary Education, 1952

Cronbach, L.J., "Test Reliability — Its Means and Determination", *Psychometrics,* Vol. 12, 1947, p. 6

Cronbach, L.J., Essentials of Psychological Testing, p 300

Dearborn, W.F. and Rothney, J., Predicting the Child's Development, Cambridge, Mass, *Sci; Art*, Mass, 1941, p 360

Dempster, J.J.B., Symposium on "Effects of Coaching and Practice in Intelligence Tests", *British Journal of Educational Psychology*, Vol. XXI, 1951

Doll, E.A., "Is Mental Deficiency Curable ?", *American Journal of Mental Deficiency*, 1947, 51 pp 420-428 quoted by S..B. Sadason in "Psychological Problems in Mental Deficiency".

Dongale, M.C., An Outline of Psychology

Drever, J., An Introduction to the Psychology of Education

Dug and Thomson, "Social and Geographical Distribution of Intelligence in Northumberland," *British Journal of Psychology*, 1923

Emmett, W. G., "Evidence of Space Factor at 11 + and Earlier", *British Journal of Psychology*, Statistical, 1949

Fleming, C.M., Adolescent at School p 148

Fleming, C.M., Adolescence, p 2, p 19, p 36, p 73, p 108, p 189

Fleming, C. M., "Socio-economic Level and Test Performance", *British Journal of Educational Psychology*, Vol. XIII, II, 1943, pp 74-82

Fleming, C. M., Research and the Basic Curriculum

Fleming, C. M., Aptitude Testing—Report of the Consultative Committee, National Union of Teachers, 1949, p 153

Fleming, C. M., The Social Psychology of Education, Chap. III. pp 12-13

Frank, L. K., Imagination in Education, 1956

Ferguson, L. W., "The Value of Acquaintance Ratings in Criterion Research", *American Psychologist*, 1948, p 290

Fisher, R. A., Statistical Methods for Research Workers, Oliver and Boyd, 1950, p 209

Freeman, F. N., Mental Tests, 1929 p 129

Freeman F. N. and Flory, C. D., "Growth in Intellectual Ability as Measured by Repeated Tests", Monograph, *Social Research of Child Development*, 1937. No. 2, p 116

Freud S., The Interpretation of Dreams

Garrett, Henry E., Statistics in Psychology and Education, 1947, 3rd Edition, p 298

Garrett, H. E., Bryan, A. I. and Perl, R. E. (1935), "The Age Factor in Mental Organisation", *Arch. Psych.*, No. 176.

Guilford, J. P. Personality, p 154

Hadfield, J. A., Psychology and Mental Health, pp 434-435

Heston, J. C. and Connel, C. F., "A Note on the Relation between Age and Performance of Adult Subjects on Four Familiar Psychometric Tests", *Journal of Applied Psychology*, 1941, 25, pp 415, 419

Higgison, G. D., Fields of Psychology, 1931

Highfield, M. E., The Education of Backward Children

Hill M. E., The Education of Backward Children

Himmelwait, H. T. and Summer Field, A., "Student Selection—An Epexrimental Investigation" 11, *British Journal of Sociology*, 1961, 2, pp 59-75

Hertz, Marguerite, R., "Scoring Rorschach Ink Blot Test" *J. Genet. Psychol*. 1938, 52, pp 15-64

Hollingworth, Vocational Psychology and Character Analysis, 1929

Howard B. S., "A Study of Aptitude for Engineering Drawing at the Age of 13", M. A. Thesis 1964, (Unpublished) University of London

Hobbers, Human Nature II, 4

Hussen, T., "Influence of Schooling upon I.Q.", Theria, XVII, 71, 1961

Hull, G. L., Principles of Behaviour, p 194

Hyde, D. M., "An Investigation of Piaget's Theories of the Development of the Concept of Number", Unpublished Ph.D. Thesis, 1959, University of London

Ingram, C. P., Education of the Slow Learning Child, 1953

James, W., The Principles of Psychology, Vol. II, pp 449-50

Dsahiell, J. F., "An Experimental Analysis of Some Group Effects", *Journal of Abnormal Social Psychology*, 1930, 25

Jersild, A. T., "Emotional Development" in Skinner (ed), *Educational Psychology*, p 354; Chap. 15

Jersita, A. T., Manual of Child Psychology

Jones, H. E., "Order of Birth in Relation to the Development of the Child", Handbook of Child Psychology, 1931

Jones, A. J., Principles of Guidance, pp 293-94

John Dollard, N. E., Miller, L. W., Doob and Sears, H. R., Frustration and Aggression, Hale University Press, New Haven, 1939

Judd, C. H., "The Relation of Special Training to General Intelligence", *Educational Review*, Vol. 36, pp 28-42

Kelly, T. L., Cross Roads in the Mind of Man, Stanford University Press, 1928

Kelly Truman, L., "Mental Factors of no Importance", *Journal of Educational Psychology*, 1939, 30, pp 139-142

Kluckholm, Clyde and Rawnaz, H. A. (ed.), Personalities etc.

Knight, R., Intelligence and Intelligence Testing

Knight, F. B., "The Effects of the Acquaintence Factor upon Personal Judgements", *Journal of Educational Psychology*, 1928, 14, pp 129, 142

Koffka, The Ground of Mind (1924)

Kohler, The Mentality of Apes (1925)

Krech and Crutchfield, R. S., Theory and Problems of Social Psychology, McGraw Hill, New York

Lambert, C. M., "A Survey of the Ability and Interest of a Group of School Boys between Ages of 11+ and 13+, Ph.D. Thesis (Unpublished), London University, 1952

Lewin, K., Principles of Topological Psychology, McGraw Hill Book Co., New York, 1936, p 87

Lippitt, R., and White, R. K., "The School Climate of Children's Groups", Child Behaviour and Development, Chapter XXVIII

Locke, Essay on Human Understanding

Lovell. K. and Ogilive, E., (University of Leeds, Institute of Education), "A Study of Conservation of Substance in the Junior School Child", *British Journal of Educational Psychology*, Vol. XXX, Part IX, June 1960, pp 109-117

McConnell, T. R., "The General Nature of Growth and Development", Educational Psychology Ed. Shinner

McClleland, W., Selection for Secondary Education, U.L.P. 1942

McDougall, W., An Outline of Psychology, p 309

McDougal, W. A., Introduction to Social Psychology

McGoech, J. A., The Psychology of Human Learning, p 27

Mitra, J. P., Selection of Pupils for Technical, Commercial and Art Schools—A Follow-up Study—M. A. Thesis (Unpublished), London University, 1954

Montage, M. F. A., "The Origin and Nature of Social Life and the Biological Basis of Co-operation", *Journal of Social Psychology*, 1949, 29, pp 267-283

Madigan, M. E., *Psychology*, 1957, p 57

Mognifico, L. X., Education for the Exceptional Child, p 125

Murphy, G., Historical Introduction to Modern Psychology, p 282

Munn, Psychology of the Rat, p 372

Moreno, G., Who Shall Survive? Beacon House, New York

Newcomb, M., Theodar, Social Psychology, p 48

Newman *et al*, "Reliability of the Interview Method in an Officer Candidate Evaluation Programme". *American Psychologist*, 1946, pp 103-109

N.F.E.R., Jenkins Test

Nunn, P., Education, Its Data and First Principle

Page, J. D., Abnormal Psychology, 1947, p 354

Paterson, D. G., *et al*, Minnesota Mechanical Ability Tests, The University of Minnesota Press, Minneapolis, 1930 p 26

Peel, E. A., Psychological Basis of Education, pp 4, 119, 184

Peel, E. A., "Assessment of Children's Interest". *Education Re-View*, Vol. 4, No. 2, p 164, 1952

Peel, E. A., "A Note on Practice Effects in Intelligence Tests", *British Journal of Educational Psychology*, XXI, June 1951

Peel, E. A., and Graham, D., (1951-52) "The Differentiation of Ability in Primary School Children". *Research Review*, II pp 40-48, III pp 31-34

Piaget, J., The Psychology of Intelligence, 129

Piaget, J., The Child's Conception of Number

Piaget, J., Logic and Psychology

Price E. J. J., "The Nature of Practical Factor (F)", *British Journal of Psychology*, XXX, No. 4, April 1940, pp 341-51

Rutter, D., Unpublished M.Ed. Thesis, Durham 1949

Sears, P. S., "Levels of Aspiration in Academically Successful and Unsuccessful Children" *J. of Abnormal and Social*

Psychology, Vol. 35

Shaffer, L. E., The Psychology of Adjustment, p 74, p 351

Shaffer, C. M., Adolescence

Sherif, M., and Cantril, H., Psychology of Ego Involvement

Sherif, M. and Cantril, H., Psychology of Ego Involvement

Sherif, M., The Psychology of Social Norms, 1936. Chapter XVII

Sherif, M., "A Study of Some Social Factors in Perception" *Arch Psychology,* 1935, p 187

Slater, E., Slater, P., "A Heuristic Theory of Neurosis" *J. Neurol.,* 1949, 7, pp 49-55

Slawson, P., "The Reliability of Judgement of Personal Traits", *Journal of Applied Psychology,* 1922, 6, pp 161-171

Schonell, F. J., Backwardness in the Basic Subject

Solomon, R. L. and Lemann, T. N., Report for the First Five Years (1946-51) Cambridge, Mass: Laboratory of Social Relations, Harvard University, 1952

Social Welfare in India, Publications Division, 1955, p 277

Smith, F. V., The Explanations of Human Behaviour, pp 128-29

Spearman, C., The Abilities of Man- McMillan (London)

Stephenson, W., "Tetrad—Differences for Verbal Sub-tests", *Journal of Educational Psychology,* May 1931, Vol. 22, pp 255-67

Stephenson, W., "Introduction to Inverted Factory Analysis with Some Application to Studies", *Journal of Educational Psychology,* 1936, 27, pp 253-267

Stott, D. H., "Interaction of Heredity and Environment in regard to Measured Intelligence" *British Journal of Educational |Psychology,* Vol. XXX, June 1960, Part II pp 95-101

Strong, E. K., Vocational Interests of Men and Women, p 8

Symonds, P. M., Diagnosing Personality and Conduct, Appleton-Century, New York, 1931

Terman, L. M., The Intelligence of School Children, 1921, p 148

Terman, L. M., Symposium: Intelligence and its Measurement, *Journal of Educational Psychology,* Vol. XII, 1921

Terman, L. M. and Merril, M. A., Measuring Intelligence, 1937

Terman, L. M., et al, Genetic Studies of Genius, Standford University Press, Standford, California, 1926, 1, 272

Thomson, G., Instinct, Intelligence and Character

Thomson, G. H., Factorial Analysis of Human Ability, Chapter IV

Thompson, G. H., "The Northumberland Mental Tests", *British Journal of Psychology*, Vol, XVI, Part 3, Dec. 1921

Titchner, A Text Book of Psychology, p 199

Tolman, E. C., Purposive Behaviour in Animals and Man

Theodore, M., Newcombe, Social Psychology, Tavistock Publications Ltd.

Tholues R. H., "The Unreliability and Function Fluctuation", *British Journal of Psychology*, Vol. XXVI. 1936, pp 325-326

Thomas, W. L., "The Unadjusted Girl", 1920

Traxber, A. E. and McCall, W. C., "Some Data on the Kuder Preference Record", *Educational Psychology*, 1941, 1, pp 253-268

Trow, W. C., Educational Psychology

Vernon, P. E., The Structure of Human Abilities, p 4 38

Vermon, P. E., The Measurement of Abilities, p 194

Vermon P. E., "The Bio-social Nature of the Personality Trait", *Psychological Review*, 1933, 40, pp 533-548

Verman, P. E., Personality Tests and Assessments, pp 4, 24, 117

Vermon, P. E., "The Psychological Effects of Air Raids" *Journal of Abnormal and Social Psychology*, XXXVI, 1941, pp 457-76

Weiman, A. G., "A Study of Transfer of Training from High School Subjects to Intelligence", *Journal of Educational Research*, Vol 39, pp 254-264

Woodworth, R. S., Contemporary Schools of Psychology, 1951

Wiseman, S., Symposium on "Effects of Coaching and Practice in Intelligence Tests" IV, *British Journal of Educational Psychology*, XXIV, 1954

Watts, A. F., Pidgeon, D. H., and Yatis, A., Secondary School Entrance Examination N.F.E.R. Publication No. 6, 1952 (Newnes .London)

Watson, J. B., Psychology from the Standpoint of Behaviourists, 1919

Wechsler, D., The Measurement of Adult Intelligence, 3rd edition, Wiliams & Wilkins, Baltimore, 1944, p 258

Wadia, A. R., (Ed). History and Philosophy of Social Work in India, 1961, p 335.

Index

A

Abilities, 101
Accidental variations, 313
Acquisition of skills, 96, 97, 98
Adjustive attitudes, 266
Adjustive mechanism, 266
Adolescence, 17, 28, 29, 205, 206, 207
Adolescence, needs of, 31, 32, 33, 306
Adopted child, 41
Adulthood, 208
Aesthetic appreciation, 99
Aggresive compensatory behaviour, 269
Amnesia, 292, 293, 299, 307
Anxiety hysteria, 290
Anxiety neurosis, 289, 290
Apperception, 4
Aptitudes, 105, 107
Association, 64
Association of ideas, 2
Attainments, 109
Attentiveness, 56, 58

B

Backward child, 166
Behaviour disorders, 261, 262
Behaviour problems, 261
Behaviourism, 5, 6
Brilliant parents, 259
Boyhood, 26

C

Case History method, 10
Case study, 267
Castration complex, 277
Catharsis, 269, 274, 276, 278
Childhood, 25
Complex emotions, 187
Conditioned response, 60, 70
Constancy of traits, 40
Crippled child, 173

D

Deafness, causes of, 171
Delinquency, 303, 304, 305, 306
Development, 13
Differentiation and integration. 156
Disorders paranoid, 289
Disorders schizoprenic, 289
Distraction in learning, 59
Dull child, 259
Dynamisms, 272

E

Educational abilities, 320
Educational guidance, 227, 228, 229
Educational psychologists, 320
Educational psychology, 6, 7, 8
Emotion, 182
Emotions, development of, 195, 196, 197, 204
Emotional development, 20
Empirical psychology, 2
Endocrine glands, 17
Endopsychic conflict, 300
Ego, 258, 262, 270, 271, 272, 277, 279
Exceptional children, 164, 165
Experimental methods, 9

F

Faculty psychology, 1
Factor, 114
Family history, 39

Figure and ground, 48
Forgetting, 78, 79
Forgetting, selective, 265
Frame of reference, 48
Fugue, 292, 293
Functional psychology, 4

G

General, specific and group factors, 124
Genetic method, 10
Gifted children, 178, 179
Group, homogenous, 313, 314
Group intelligence, 135
Group factors, 120, 122, 123

H

Handicapped child, 167, 168, 169
Harward growth study, 155
Heredity and environment, 35, 38, 39
Homosexual behaviour, 260
Howard growth study, 104, 106
Human learning, 91, 92, 93
Hypnosis, 294
Hysteria, 269, 293, 294
Hysterics, 269

I

Id, 270, 271, 272
Images, 50, 51
Imagination, 49
Individual development, 24
Individuals and group, 239
Infancy, 258
Insight, 82, 85, 86
Instinct, 182, 183, 184, 186
Intelligence, 101, 102, 103, 128, 129, 130, 131, 150, 259
Intelligence quotient, 133, 314, 317
Interest, 57, 110

J

James Lange thoery, 185
Judol, 90

K

Kudur Preference Record, 112

L

Laissez — faire, 249, 250
Lambert, 110
Law of readiness, 68
Law of effect, 67, 68
Learning and maturity, 62, 63
Leader and the group, 247
Levels of aspiration, 94
Lewin, 242
Limitations of factor analysis, 125
'Lime-light' behaviour, 260
Libido, 270, 272, 273, 276, 277

M

Maladjustments, 258, 259, 260, 264, 265, 267, 268, 269, 281, 282, 284
Mania, 298
Mean, 143
Mechanism of retreat, 265
Memory, 52, 53, 54, 55, 115
Mendel's Laws, 36, 37
Mental abilities, 320
Mental age,. 105
Mental deficiencies, 175
Mental development, 19
Mental health, 255, 256, 258, 279, 280, 285, 286, 287, 288, 303
Mental hygiene, 267, 278, 279, 280, 281, 282, 283, 284, 285, 286
Mental hygienist, 280
Mental retardation, 177

Mental testing programme, 267
Mental tests, 267
Mentally handicapped, 173
Motive, antagonistic, 258
Multiple personality, 292, 293, 299

N

Narcisism, 277
Needs, 198, 199
Need reduction, 74, 76
Negativism, 262, 264, 269
Nervous system, 17
Neurasthenics, 290
Neurosis, 270, 273, 274, 288, 289, 294
Neurotics, 274
Nutrition, 16

O

Oedipus complex, 277

P

Pavlov, 72
Peel, E.A., 111
Percentile rank, 144, 145
Perception, 46, 47
Personality, 210, 211, 212, 213, 216, 217, 218, 219, 257, 258, 267, 268, 269, 270, 271, 273, 274, 276, 282, 283, 284, 286, 287, 288, 289, 292, 294, 297, 300, 301
Personality development, 261
Personality Investigation, 260
Personality negativistic, 264
Personality traits, 188, 189, 190, 191, 265
Phobia, 269, 289, 290, 295, 296, 297, 299, 307
Physical developments, 14
Play analysis, 170
Principles of guidance, 234
Process of adjustment, 200, 201, 202, 203
Projection technique, 11
Projection tests 223
Psychiatrists, 262
Psychiatric interview, 267
Psychology, 266
Psychology, analytical, 272
Psychology, Freudian, 260
Psychological examination, 267
Psychological interview, 267
Psycho analysis, 270, 272, 273
Psycho-analysts, 268
Psycho-analytic method, 268
Psycho-analytic theory, 258
Psycho-neurosis, 287, 288, 303
Psychopathology, 298
Psycho synthesis, 273
Psychotherapy, 269, 270, 274, 278, 282
Psychoses, 306

R

Rationalisation, 262
Regressive behaviour, 265
Reliability and validity of interview, 214, 215
Reliability and validity of tests, 136, 137, 138
Retarded child, 166
Roscharch, 11

S

Sampling theory, 121
Schizoprenia, 262, 265
Scholastic inability, 259
Secondary reinforcement, 77
Sensation, 45, 46
Self-involvement, 93
Sign learning, 79, 80
Social learning, 246

Sociogram, 253
Sociometric, 253
Social development, 21
Speed and power test, 134
Stanford Binet test, 317
Standard deviation, 143, 144
Standard error, 139
Standard score, 318, 319
Statistical method, 11
Stimulus response, 65
Structural psychology, 3
Structuring, 47
Structure of human abilities, 116, 117, 118, 119
Study of twins, 42, 43
Sublimation, 35
Super ego, 270, 271, 272
Supplementing, 47

T

'T' score, 108
Teacher counsellor, 231
Tension, 261, 262
Test of reasoning, 114
Therapy, 269
Tolman, 80, 81
Transposability of formal thinking, 87, 88, 89

V

Validity rating, 222
Vector, 243
Vocational ability, 235
Vocational guidance, 122, 233, 234, 281, 288

W

Withdrawal, 259
Withdrawal aggressive, 264

S.C.E.R.T., West Bengal
Library
Calcutta
25/3, B. C. Road